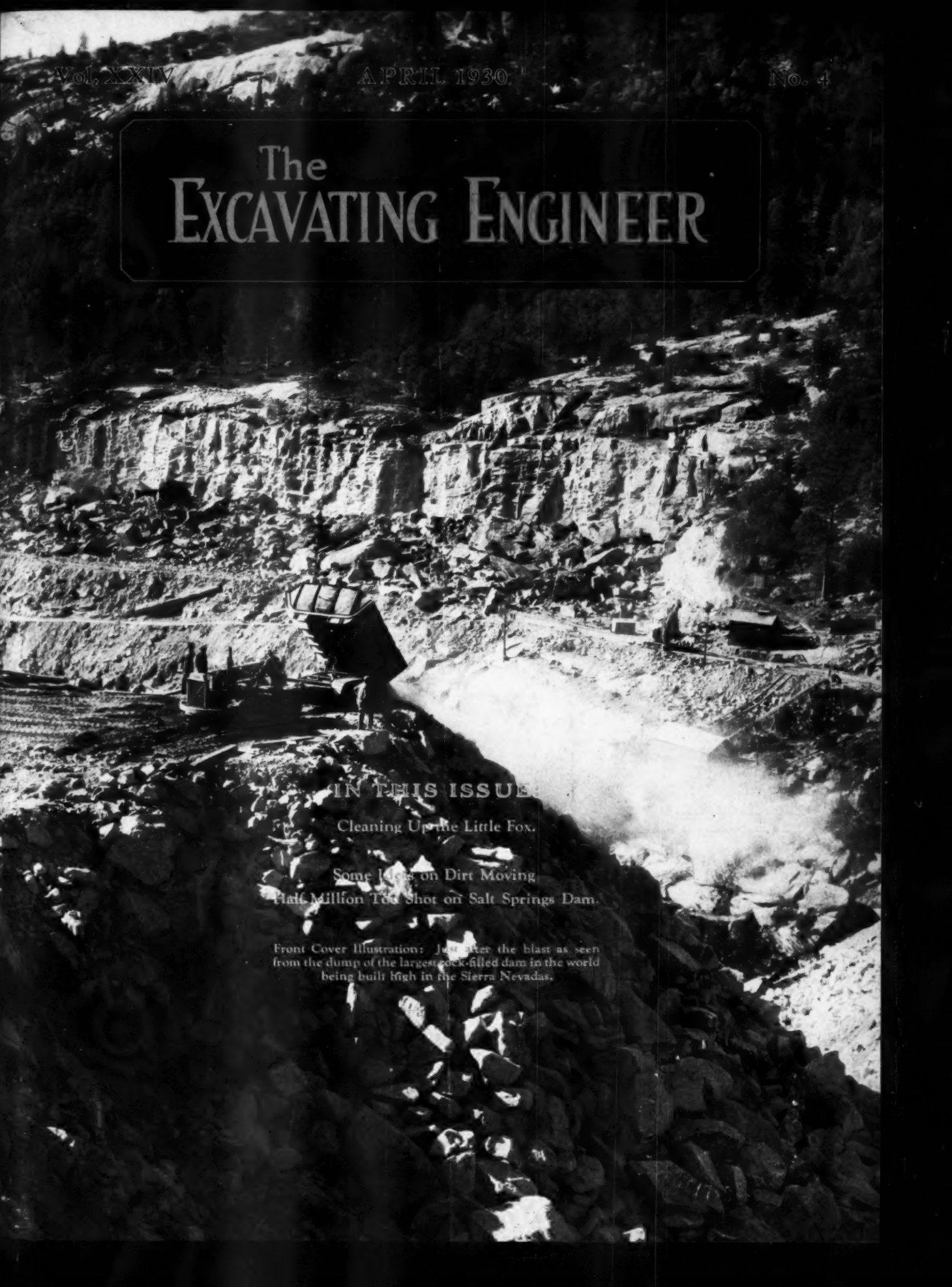
Vol. XXIV APRIL 1930 No. 4

The EXCAVATING ENGINEER



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Cleaning Up the Little Fox.

Some Light on Dirt Moving

Half Million Ton Shot on Salt Springs Dam.

Front Cover Illustration: Just after the blast as seen from the dump of the largest rock-filled dam in the world being built high in the Sierra Nevadas.

41-B Electric shovel—Elkhart Moraine Sand and Gravel Co., Glenbeulah, Wis.

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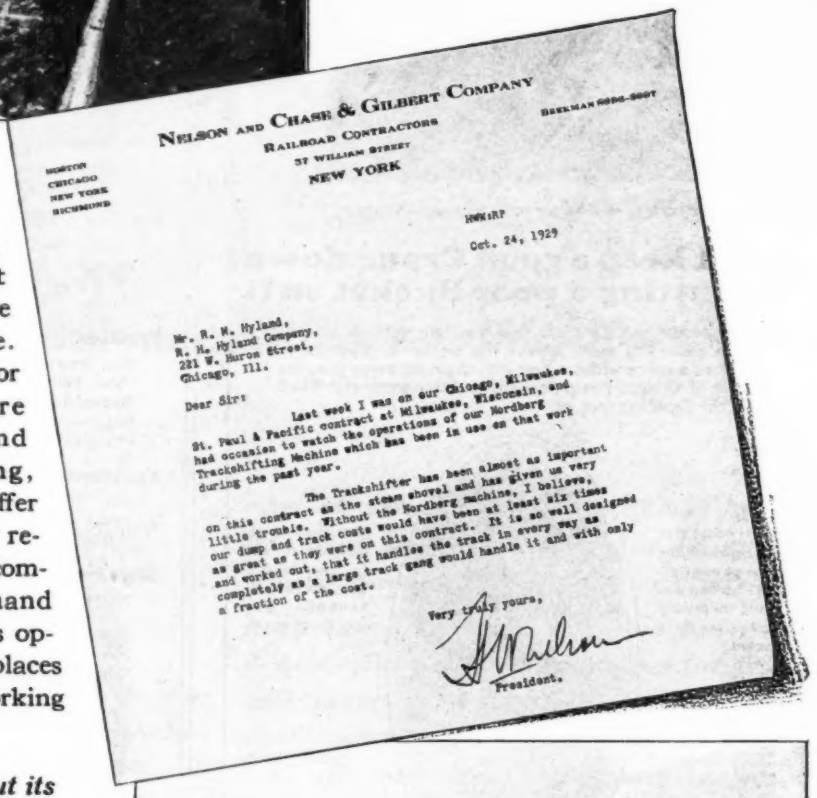
Shifting track by machine saves 83% of track labor expense

In the illustration at the left can be seen the piles of clay dumped at either side of the track and used in building the fill for a railroad yard. At the bottom, the track has been raised and is being shifted over to the edge of the dump.



NELSON AND CHASE & GILBERT COMPANY
RAILROAD CONTRACTORS
37 WILLIAM STREET
NEW YORK

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BERLEMAN CODE-5TH ED.

Oct. 24, 1929

Mr. R. N. Hyland,
R. N. Hyland Company,
221 W. Huron Street,
Chicago, Ill.

Dear Sir:

Last week I was on our Chicago, Milwaukee, St. Paul & Pacific contract at Milwaukee, Wisconsin, and had occasion to watch the operations of our Nordberg Trackshifting Machine which has been in use on that work during the past year.

The Trackshifter has been almost as important on this contract as the steam shovel and has given us very little trouble. Without the Nordberg machine, I believe, our dump and track costs would have been at least six times as great as they were on this contract. It is so well designed and worked out, that it handles the track in every way as completely as a large track gang would handle it and with only a fraction of the cost.

Very truly yours,

President.

While such a saving may seem extravagant to some, yet it is the invariable report received from users of the Nordberg Track Machine. Wherever track is raised or shifted, similar savings are possible. Building fills and waste dumps, grade raising, construction projects, etc., offer opportunities for materially reducing labor expense, as compared with the old-time hand methods. This machine, its operator and a few laborers replaces the normal track gang working with jacks and bars.

Let us tell you more about its labor-saving possibilities.

NORDBERG MFG. CO.
Milwaukee, Wis.

NORDBERG

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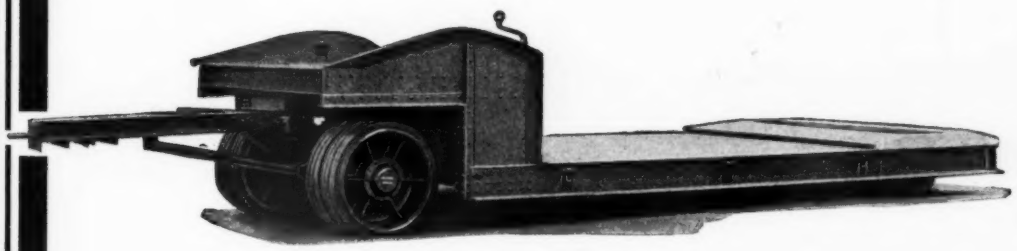
The new WILLIAMS 5-axle Trailer

that contractors say

is without an equal for heavy loads



YOU have ***bigger overload capacity*** with this trailer of modern design — the 5-axle WILLIAMS "Arch-Girder" Trailer.

It has ***extra strength, without increased weight.***

Look at the unique rear-end design, with each rear wheel having a separate axle, supported at both ends. No overhang.

Rigid cast-steel frames carry the rear wheels in pairs — and each frame is free-swiveling, keeping the trailer's load evenly distributed, with every wheel kept in contact on rough road. Plenty of clearance, so that the wheels can't jam.

Stronger front end — with the deep arch-girders reinforced by sturdy steel stiffeners. No buckling. ***Big front axle bearing***, with 40% greater factor of safety than usually found on trailers of same rating.

Easier to load—to haul—and to brake

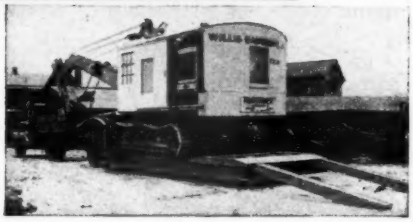
You save time in loading heavy equipment at the rear, because the loading point is lower.

Your truck pulls a "WILLIAMS" 5-axle Trailer easier, because every wheel has big Timken bearings, and extra broad surface.

Easily stopped with load — big brakes, operated by ratchet handle of street railway type.

Mail us the coupon and get bulletin TR-3, giving a good description of this modern trailer.

The heavy-duty trailer that's *right*, from skids to drawbar. Look it over! — make your own comparisons — and you'll decide on the 5-axle WILLIAMS "Arch-Girder" for *your* next trailer.



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Send me Bulletin TR-3, showing how *more strength* has been built into the 5-axle WILLIAMS "Arch-Girder" Trailer *without increased weight.*

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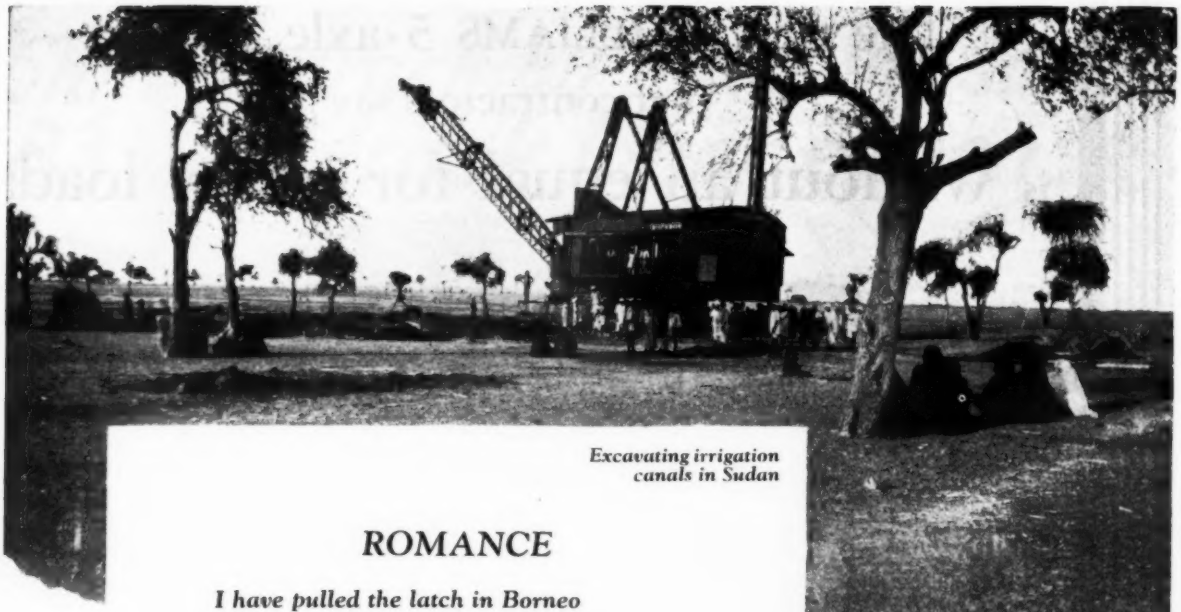

Excavating irrigation canals in Sudan

ROMANCE

I have pulled the latch in Borneo
And cut them in in Timbuktu —
I've spun 'em round in the Arctic snow
Where bundled Lapps were my pit crew.

I have heard 'em talk in heathen tongue ;
I've seen black skins shine with sweat ;
(A boomer was I when I was young)
The mines I've worked I half forget.

I've lived in castles in foreign lands —
I've stayed in hovels where fevers lurk,
Where none but the shovel understands
A white man's troubles, talk, and work.

And my old shovel would talk to me
From under the coating of dirt and rust;
She'd roar and laugh and shriek with glee
Till jungles shook as they ate our dust.

With rattle and clank of dipper stick,
With shriek of whistle and roar of steam,
We'd rip up the dirt and turn the trick
To make come true some dreamer's dream.

And that's the romance of the shovel hound
That calls him away to journeys long
To follow his trade the world around,
To dig and live by the shovel's song.

By Charles A. Roach

Sudanese mounted police aboard their ships of the desert

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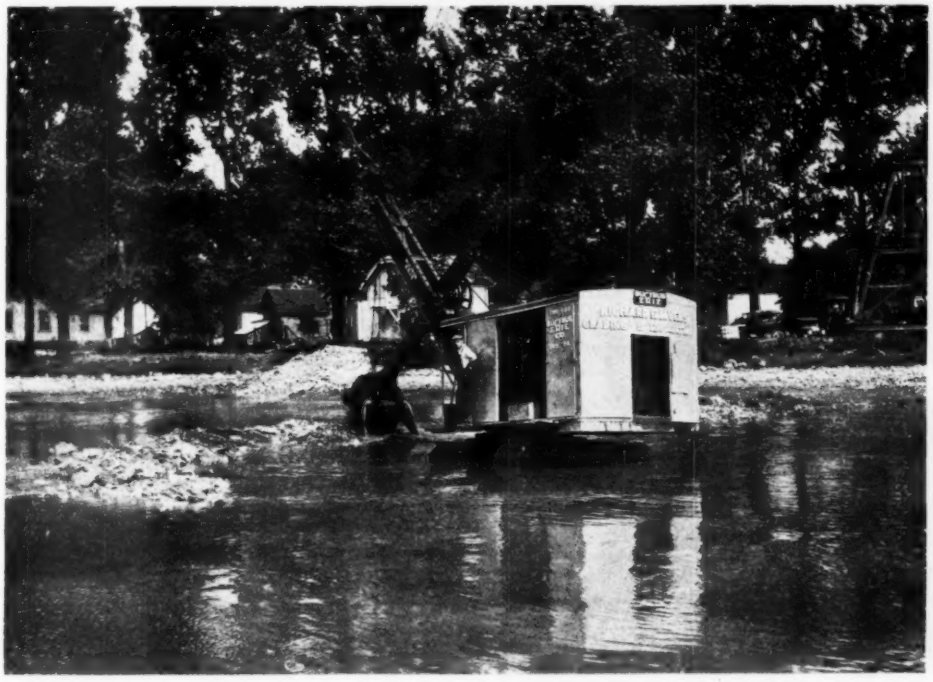


The Gas + Air took to the water like a duck, working with cats under water through the whole job, and at times with water up to the turntable.

Cleaning Up the Little Fox

Contractor Richard E. Myers handles park improvement at Waukesha, Wisconsin.

THE Little Fox River, flowing through Waukesha, Wisconsin, is at present undergoing an extensive "face-lifting" operation. Richard E. Myers, well-known Milwaukee contractor, is the "surgeon" in charge, performing the operation with his Bucyrus-Erie GA-2 shovel. The job involves the removal of earth, rock, an old concrete dam and river bottom material totaling well over 100,000 cubic yards.

As the material is excavated, the shovel dumps it on the banks, where it is being graded for a driveway. On the north side of the river, the City of Waukesha will build a park along this new driveway. This excavation is serving a double purpose, for, besides deepening the river, and cleaning the river bed, the material is well suited and conveniently located for the proposed driveway. Where the river is too wide for shovel work, the GA-2, converted with dragline boom and bucket, spots the material for the grader with a single cast.

Many years ago, the Little Fox was dammed

A nasty job of digging here but the Myers outfit "eats 'em up" no matter how hard they come. Bucyrus-Erie Erector T. A. Hontz at the levers, operator Charles Porter on the running board, with the oiler-pitman standing by.

where it enters the city to furnish water power for a grist mill, and the pond above this dam was used to harvest ice in the winter time. This old dam was built of large logs laid in crib fashion and filled with stone, after which concrete was poured in to seal the mass into a permanent and water-proof structure which was finally topped with large stones each weighing a ton or more. The contract called for removing this old dam, so the Gas + Air waded in above it and cut through the breast of the dam into the stream, excavating a channel deeper than the dam foundation. Though no dynamite was used, no difficulty was experienced in tearing out the obstruction with the three-engine gas rig.

When the dam was opened up the water from the basin poured out, stranding many fish that had made their home in the reservoir. Barefoot Waukesha youngsters gathered in glee to catch these in their bare hands. Many clams also made the river their home and were left high and dry by the channel change. It was a usual sight to see clam hunters opening their catch to look for fresh-water pearls, though no catches of any note were reported.

One-Yard Shovel Handles All the Excavation on the Job

Once through the dam, a cut twenty-five feet wide was dug across the river from north to south

Cutting through the old dam with its concrete, logs and boulders was hard digging but the 1-yard GA-2 handled it without blasting.

shores, and thence along the south shore for about two thousand feet to serve as a diversion channel to carry the water while the balance of the river bed was excavated. This channel was about three feet deep, the digging being done with water up over the cats. It was planned to handle the remaining excavation with a drag scraper outfit as far as possible after this channel was opened to carry the river, but this method proved impractical and the Gas + Air was called on to finish up the job. The material consisted of stony gravel under two to three feet of soft muck.

At the time of writing, the GA-2 has moved over 60,000 yards, and there are 30,000 to 40,000 yards yet to be dug. Following the completion of the excavation, a new dam is to be built, bringing the river to the desired depth, and providing facilities for bathing.

Below the dam the river will run 250 feet wide and eight or nine feet deep for about 400 feet where it will widen out to fill its present channel. The beautiful driveway bordering it on either side under the wide spreading branches of the trees will make it a real beauty spot, and the adjoining park will prove a pleasant place to spend the leisure hours of the lazy summer days.

Only the Pre-Showing for This One!

Two ladies, impeccable spinsters both, appeared at Palm Beach recently, with a portable movie camera. They wandered here and there, kodaking as they went, and then went for a dip at The Breakers, leaving their camera, among other paraphernalia, on the beach. At this, a practical joker snatched the instrument, smuggled it into the men's sunbath, and shot half a reel of gentlemen lolling carelessly about in their altogether. Then he rushed back and replaced the camera. On their return, the ladies gathered it up and hurried off to get a few more pictures before the sun went down. The ultimate outcome is unknown, which is one trouble with this kind of practical joke.

— *The New Yorker.*

Oh, Buoy!!

Lifeguard (with girl in arms): "Sir, I have just resuscitated your daughter."

Father: "Then, by Gad, you'll marry her!"

They Seldom Do

Daughter: "John and I are engaged, but it must be kept a secret."

Father: "Till when?"

Daughter: "Until John realizes it."

Baltimore Basement

Contractors Potts & Callahan recently completed excavation for the St. Paul Street Garage in Baltimore, Maryland. The accompanying illustration shows their B-2 Bucyrus-Erie loading to a White truck while the boys with the concrete mixers are pouring column foundations right behind them. Plank was used for the truck runways to facilitate hauling. It will be noted that a screen is clamped over the smokestack of the shovel to trap flying cinders drawn up through the flues.

Bill Johnson of the Princess Pat

By "ANDY"

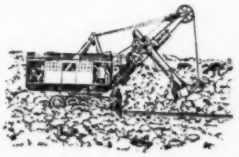
Bill Johnson was the track gang boss
Who worked at Princess Pat;
He smoothed the humps and lined the dumps
And fixed up this and that.

He had a dandy crew of men —
A score of husky hands —
Of Swedes a few, a Wop or two,
The rest from Balkan lands.

One day the Old Man came to Bill,
And, "Bill," he says, says he,
"We're shipping light, cut down tonight,
Lay off — say, two or three."

So that night Bill laid off the three
That looked the worst to him;
It made him sad for times were bad,
And new jobs mighty slim.

Next day the Old Man came again
And says, "How goes the mine?"
Bill says, "By Yee, it sure beats me,
But things is goin' fine."



"I thought as much," the Old Man says,
"I've found this always right:
"The fewer men the better men —
Lay off some more tonight."

So Bill laid off another three
And next day laid more track,
Put in more ties of larger size
And moved a shovel back.

"I've got the system now, by Yee!"
Shouts Bill with eyes alight,
"The fewer men the better men —
I'll can three more tonight!"

The next day Bill laid off a pair;
The next he fired two more;
And seven men did more than when
He had an even score.

"By Yee, by yumpin' Yimminie!"
Says Bill, "I sure am smart —
"The fewer men the better men —
"I've got that down by heart."

And when next week the Old Man came
He looked in vain for Bill;
The gang was gone and Bill was gone,
The shovels standing still.

And when he asked they told him how
Bill had cut down the gang;
"The fewer men the better men,"
The motto that he sang.

And then Bill worked awhile alone
While laughing at each chore —
He worked like hell and things went well
Till Bill laid off one more.

Some Ideas on Dirt Moving

An interview with A. Herbold, foreman and operator on highway construction for the State of Colorado.

A. Herbold

WE found Mr. Herbold in charge of a shovel outfit building a short cut from Oak Creek to Steamboat Springs, Colorado, which will cut off two miles of bad grade and give an all-year-around road between these points. The section under construction was about three and one-half miles long through Oak Creek foothills, and cuts off a loop on the old road. At the time of our visit one mile was finished, and the entire three and one-half miles was completed during the 1929 season from May 20, 1929, to December 31, 1929. The grade was dug twenty-two feet wide through the cuts and built twenty-six feet wide on the fill. The steepest grade was five per cent.

Hard Digging on These Colorado Roads

Material was stratified sandstone, rock and doby clay, which was dug by the Bucyrus-Erie Gas + Air which was handling the excavations with practically no shooting. Mr. Herbold writes that he used only 1000 pounds for the entire job, although some of the job looked pretty hard. Practically no hand work was necessary, as the Gas + Air finished up the ditches as it went along. Gasoline consumption ran about 50 gallons in eight hours, and the machine averaged from 200 to 500 feet of cut a day, yardage running from 400 to 450 yards, although as high as 900 yards were made in dirt. Trucks are used for hauling, there being a U. S. Liberty and a Peerless on the job at the time of our visit.

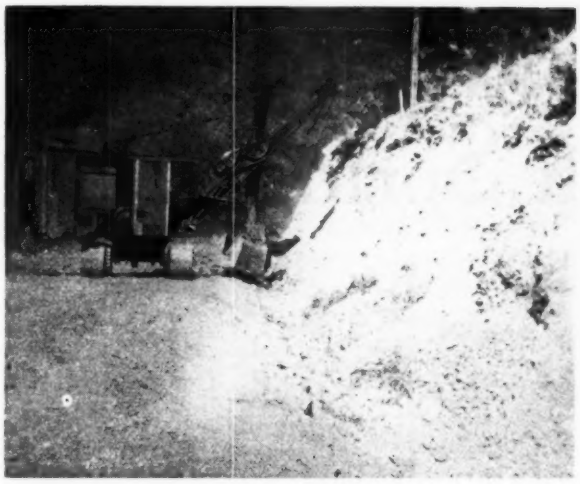
In talking over things that he had learned in his

50-foot cut on the center line in this through cut 300 feet long.

experience as a dirt mover, Mr. Herbold stressed the importance on a small job to holding the crew to a minimum.

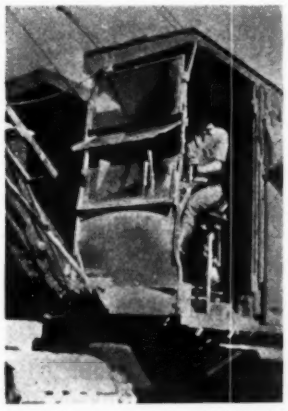
"A contractor," he illustrated, "hires a man as a truck driver, blacksmith, powder man or for some other specific job. Obviously on a small job you cannot keep these men busy at their regular occupation, and accordingly if they are hired as special-

Looking across the valley at the new highway cutting an even grade along the foothills just out of Oak Creek.



Ditching, even in this unblasted sandstone and clay, is no trick at all with the Bucyrus-Erie Gas + Air.

ists there is a lot of their time charged on the job to which the contractor gets no returns. In hiring men I have it understood beforehand that they are willing to pitch in on something else when there is nothing doing in their own particular line and I see that they do it."



The home-made windshield on this early Gas + Air gives the operator part of the protection and visibility found on the latest models.

Advantages of Opening Up Your Road for Two-Way Haul

Another theory upon which Mr. Herbold expressed himself strongly is opening up as long a section of the road as is practical in order to be able to move dirt from the cuts both ways, utilizing it in fills to take advantage of the shortest possible hauls, maintaining a passable roadway to the dumps on both ends of the road and bringing borrow and waste to a minimum.

"You have to move the dirt anyway," said Mr. Herbold, "and it is no trick to move these shovels with their caterpillar-type mountings, so why not take a light cut through to give your hauling equipment a chance to move both ways? Then you can go back through and finish up, moving your dirt where it will go to the best advantage."

One of the little stunts which Mr. Herbold applied on this job is a home-made windshield for the Gas + Air, shown in one of the accompanying illustrations. It was made out of two old truck windshields secured in an automobile scrap yard. It gives the operator clear visibility, and protects him from cold mountain winds and driving rain.

"Open up your roads," says Mr. Herbold, "so you can put your dirt where you need it with the shortest possible haul."

The work on the Oak Creek to Steamboat Springs cut was done under the supervision of H. L. Jenness, Division Engineer of the State of Colorado.

Graveling in Massachusetts

One of the jobs handled by contractor R. G. Watkins and Sons of Amesbury, Massachusetts, last season was building 3½ miles of gravel road near Amesbury requiring 33,000 cubic yards of excavation. Work included both roadway excavation and graveling. The accompanying illustration shows the Bucy-

rus-Erie 1030 which handled the excavation loading into one of the Mack trucks used for hauling from the gravel pit. Average production from the 1030 on this job ran about 600 yards per 9 hours with the peak at 650 yards. Horace M. Watkins of R. G. Watkins and Sons advises that they are very well pleased with this ¾-yard gas machine.

Red: "Do you know why girls walk home?"
Louise: "No, I don't."
Red: "Come on, let's go riding."

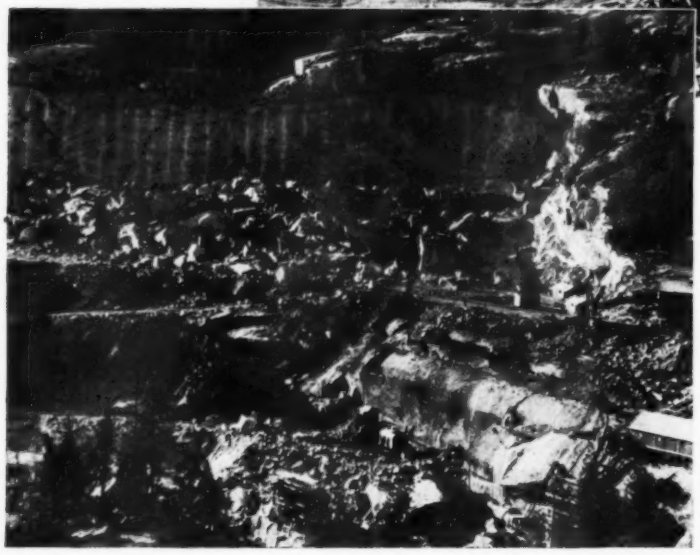
Half Million Ton Shot on Salt Springs Dam

SALT SPRINGS DAM on the Mokelumne River in the Sierra Nevadas will be the largest rock-fill dam in the world. Hundreds of thousands of tons of granite, torn from the precipitous walls of the gorge near the dam site by the steel fingers of powerful electric shovels, are required for construction.

A complete description with many illustrations of the Salt Springs dam site and equipment on the job, has been given in *The Excavating Engineer** and here we have an interesting group of additional pictures showing a shot of 112,000 pounds of dynamite bringing down a half-million tons of granite in the north quarry.

Above: Ready for the shot. The two Bucyrus-Erie 120-B's stand aside hungry for the thousands of tons of rock soon to be released.

Right: There she goes. 112,000 pounds of Hercules powder does the trick, 500,000 tons of rock springs from its centuries of rest at the making on an electric contact.



Below: The smoke has just cleared away after the giant blast. Caterpillar Sixty's are already at work clearing up the roadway.

This dam, the first and basic unit of twenty-five million dollar program of the Pacific Gas and Electric Company of San Francisco, will provide a reservoir for 130,000 acre feet of water and develop 33,500 horse power.

As described in *Pacific Service Magazine*, "the dam itself will consist of a huge inverted wedge of "drop-fill" rock, rising 300 feet above the present stream bed with a crest length of 1300 feet. The crest will be fifteen feet wide, and from it the upstream face of the dam will be carried at an angle of 37½ degrees to the surface of the stream, while the downstream face will be constructed on a slope of 35½ degrees. As a result there will be a length of 800 feet between the

*See *The Excavating Engineer* for August, 1929.

upstream and downstream toes of the dam, and in that length the river drops twenty feet. The upstream surface will be protected by a water-tight facing of reinforced concrete, graduating from a thickness of three feet at the bottom to one foot at the top. Underneath this will be a layer of derrick-placed rock fifteen feet in thickness. On reaching the surface of the river the concrete facing will be carried down to bed rock and there made secure against seepage, and the placed rock layer will be carried down with it in order to give it support.

Upstream Face of Dam Finished with Extreme Care to Prevent Damage by Temperature Changes and Settlement Strains

"Particular care will be taken with this upstream face. In the layer of placed rock each piece will be set by a derrick and all the intervening chinks filled as solidly as practicable with smaller fragments. This, of course, is done to furnish adequate surface and support for the outside concrete slab, upon which dependence is placed to render the dam water-tight. Suitable expansion joints will be introduced into this slab to prevent its being ruptured under temperature and settlement strains, there being considerable variation between summer and winter. Should any water chance to seep past this concrete face, it will readily drain off through the porous rock-fill without in any way endangering the structure."

Eight Excavators, Including Two Four-Cubic-Yard Quarry Giants, Handle Rock Excavation

A Bucyrus-Erie 75-B electric 2½-yard shovel has recently been added to the fleet of Bucyrus-Erie 120-B 4-yard electrics, Marion 37, 32 and 21 electrics, Bucyrus-Erie 30-B steamer and P. & H. 206 gas crane. General Electric locomotives, Clarke cars, Athey rear dump wagons, and Caterpillar tractors are used for hauling; Armstrong churn drills and Ingersoll-Rand air hammers for drilling.

Caterpillar "Sixty" drawn Atheys wheel their loads out to the precipitous incline of the dump, over the smooth packed roadway rolled beneath their treads.

Sheer walls of granite rise on either side of the Mokelumne where rock enough to build the Pyramid of Cheops will be piled into the chasm to form a dam 330 feet high and 1000 feet at the base.

Don't Forget the Warning Signs

The Department of State Highways of North Dakota recently issued a circular calling attention to the North Dakota Statute regarding warning signs on road construction work. This provides in part as follows:

"Whenever the state highway commission, any county board, or any township board shall enter into a contract for the construction and improvement of any road, or any culvert, or bridge thereon, they shall, as a condition of such contract, provide therein that the contractor shall place suitable warning signs, which can be read for a distance of one hundred feet in day time, and also erect and place at night, a red lantern at both ends of such construction work, no less than three hundred (300) feet therefrom, warning the public that such road is under construction or improvement and either is closed, or impassable, or dangerous for travel thereon, provided that nothing in this act shall make any town, county or the state liable for the failure of such contractor to erect such warning signs."

Many of the other states have similar laws. Regardless of a statute compelling installation of proper warning, contractors wish to protect those who travel in the vicinity of their work from possible accident. Omission of suitable warning signs is not an indication of the contractor's wish to disregard the safety of his fellows, but rather may be attributed to the carelessness of the foreman or watchman, or failure to delegate to some particular individual the responsibility for placing such warnings.

How about your job, are the danger points properly protected? Are the signs sufficiently conspicuous — are night drivers and pedestrians protected by properly cleaned red lanterns?

Every contractor should know definitely that proper warnings are being properly used by his men. It is not merely a question of protecting himself against the possibility of legal penalty or damage suit, but rather one of common humanity to man.

FIELD NOTES

What to Know in Selecting and Using Oil for Truck Engines

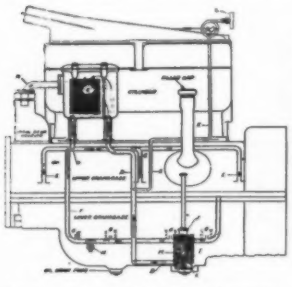
By H. L. KAUFFMAN, *Petroleum Consultant*

Power for the truck is dependent upon the operation of an internal combustion engine, utilizing gasoline as a source of energy. But without lubrication, the truck engine will soon cease to function; and without proper lubrication, the efficiency of the engine will be materially decreased. What to know in selecting oil for lubricating the truck engine, and how to use that oil most effectively, will be discussed in the present article.

Fundamentally, the truck engine involves the same principles of operation as the automobile engine. Consequently, with regard to lubrication, there exists in each the same limitations and conditions. The engine used in trucks is of the four-cycle type, and generally is designed for full-pressure lubrication to all wearing parts; or, in some engines, the lubricating system is designed for pressure lubrication of the bearings, while the cylinders and other parts are lubricated by the splashing or spraying of the oil upon these units.

Grade of Oil to Use

On the average, a more viscous oil is required for the lubrication of the truck engine than for the automotive engine. But, it should be emphasized that use of *too* viscous an oil, especially during cold-weather conditions, is highly objectionable; for, too heavy a grade of lubricant is apt to cause not only difficulty in starting but also a great variety of engine troubles, such as scored cylinders, burned-out bearings, seizing of certain parts — all due to the oil's being too viscous properly to reach the wearing surfaces.



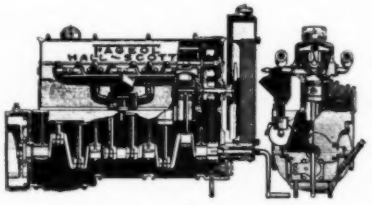
A truck engine oil circulating diagram. Arrows indicate oil flow. A—Circulating pump—located in crankcase sump. B—Pipe to top tank. C—Tank and filter screen. D—Distributing pipe for main bearings. E—Branch pipes to main bearings. F—Distributing pipe to trough. G—Troughs for crankpin lubrication and splash. H—Overflow pipe lubricating timing gears. I—Reservoir—lower crankcase. J—Level indicator. K—Pipe to pressure indicating gauge on dash. L—Pressure indicating gauge on dash. M—Pump filter screen. N—Emergency oil level cock.

Courtesy—International Motor Company

During the winter operation of the truck, that is for temperatures below 30-35 degrees F., naturally a less viscous oil should be used than in the summer. This is necessary because under colder atmospheric conditions the viscosity of the lubricant will increase, with a resultant greater internal fluid friction. Under such conditions lubricating efficiency is decreased and more power is required to bring and to maintain the truck at the desired speed. It is, therefore, readily evident that from a lubricating standpoint efficient functioning of the truck engine in winter is largely dependent upon the engine operating temperature and the viscosity of the oil used, which latter is essentially a function of the temperature.

Too viscous an oil is also relatively difficult to pump, thereby representing another reason why lower-viscosity oils are advisable for use in the truck engine in winter than in summer. Here let it be mentioned that if the oil pump is unable to lift an unusually heavy oil, or if there is a possibility of the oil's being discharged back into the crankcase through the relief valve, operation of the engine for perhaps several minutes with almost no lubrication may result — a condition that is decidedly undesirable. Consequently, whenever there is any doubt about the fluidity of the oil in the crankcase, lubrication should be insured by warming up the cold engine very slowly. By taking this precaution, the heat generated will so reduce the viscosity of the oil as to enable it to be pumped properly.

So, too, for the majority of oils, the more viscous the oil the higher its pour test — which is the equivalent of saying that most of the heavier lubricants at low temperatures congeal or become sluggish more rapidly than do the lighter oils. Therefore, in order to obtain greater ease in starting the truck in winter, preference ordinarily may be shown the oil of lower pour test.



Courtesy—Fageol Motors Company

Phantom view of a 6-cylinder truck engine. All bearings are force feed lubricated through drilled crankshaft and hollow rocker arm shaft. Oil is forced under pressure to camshaft and flows over chain drive to sump.

Manufacturers of engines used in trucks are gradually standardizing on S. A. E. specifications for the grade (viscosity) of oil to be employed in their particular engine. Such an arrangement makes it easier to select an oil of the proper viscosity.

Factors Influencing Efficient Truck Engine Lubrication

Selection of the proper grade of lubricating oil for the truck engine is an important step toward insuring efficiency in the lubrication and operation of the engine, but there are other important factors that also influence the results obtained.

A proper engine temperature is necessary for the efficient functioning of the truck engine. This temperature will range between 160 degrees and 180 degrees F. In winter, suitable radiator covers or shutters when intelligently adjusted, aid in maintaining a proper engine operating temperature.

Crankcase dilution, which must be kept at a minimum for efficient engine lubrication, is closely influenced by the engine temperature. In other words, the cylinder temperature must be sufficiently high to

insure complete vaporization and burning of the fuel; otherwise, the unvaporized portions eventually will reach the crankcase.

Proper carburetor adjustment aids in lessening the extent of crankcase dilution, since, in order to burn gasoline *effectively* in an internal combustion engine, it must be atomized and mixed with a certain definite amount of air. A re-setting of the carburetor by an expert is particularly essential for efficient operation of the truck in winter.

Improper use of the choke is one of the main causes of excessive crankcase dilution. The proper method is to work the choke slowly back and forth until sufficient explosions have taken place to insure continued operation, then gradually push the choke in all the way, and thereafter allow the engine to idle until it has warmed up sufficiently, during which time it is advisable to adjust the spark and throttle levers as closely as possible to a point where the engine will run evenly and will fire on all cylinders.

Where trucks are fitted with a primer, the priming charge should be injected into the manifold while turning the engine over with a starter. This procedure will insure getting the priming charge into the compression chamber.

Use of gasoline of relatively higher volatility likewise will decrease the extent of crankcase dilution, since the higher the volatility, the less will be the necessity for using the choke during cold-weather operation of the truck. It should be remembered, however, that even if so-called "high-test aviation gasoline" were used in the truck engine, some dilution of the lubricating oil would take place.

From the Mail Bag

Thank You, Mr. Gray

Gadsden Purchase, Inc.

Colorado Springs, Colo.

Gentlemen:

I appreciate thoroughly your work and hope you will continue my name on your rotating list. Your paper is a big aid to us mining operators and you lead the game.

(s) LAWRENCE T. GRAY.

November Issue Gladly Sent

Addis Abeda, Abyssenia.

Dear Sirs:

I was interested to see an article in *The Excarating Engineer* for November, 1929 on the Sukkur Barrage canal excavation. I saw the paper in the American Consulate here, and I wonder if you would be good enough to send a copy to .....

A number of Bucyrus-Erie machines are in use in the Sudan, and the information in this publication would be of interest.

Yours faithfully,

(s) R. M. MACGREGOR

Irrigation Advisor, Sudan Government.

We Thank You — "Judge" Thanks You, Too

Los Angeles, Cal.

Gentlemen:

The cartoon "Ancient Sources of Modern Invention — The Steam Shovel," published in your December 1929 number, is the cleverest cartoon I have seen in many years.

Very truly yours,

LCH:LH (S) LOUIS C. HILL.

Feminine Sport Report

"Babe Ruth walked twice today."

"Gosh, she should be more careful whom she rides with."

Thanks — Fine Feathers Make Fine Birds!

East St. Louis, Illinois.

Gentlemen:

I see a Combination Shovel and Clamshell Machine for Sale. Type "B" Erie.

I am interested in an Erie as I am at present operating one, a Type B-2 and if there is any such thing as a whiz this Erie B-2 sure is a whiz. Please notice the Feather in her Cap. The Fire Boy knows his Groceries, and he is none other than George Luick, Member of Local No. 315, St. Louis, Missouri. Oh, and the Gentleman in the Saddle, why don't you recognize? Well that's Luthis Fritts, a member of Local Union No. 890, Granite City, Illinois. We are digging the Foundation for a Madison Square Garden down in our town, St. Louis, with 130,000 yards to be moved.

Respectfully,

(S) LUTHIS FRITTS

The EXCAVATING ENGINEER

A Monthly Publication Devoted to Excavating and Allied Subjects

REGULAR SUBSCRIPTION: $1.00 a year for 12 numbers.
SPECIAL SUBSCRIPTION: Upon application on card inserted in this number, subscriber's name will be placed on Rotating List, whereby he will receive The Excavating Engineer frequently (not regularly) free of charge.

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The Business Situation

There has been very little change in business conditions during the past month. Considerable comment has been made in regard to the downward trend of commodity prices. Wheat, wool, cotton, sugar and certain other commodities have lost value, but since this is true in the world market as well as in our own domestic market, it does not place us at a disadvantage. However, some softening of such prices is to be expected during a period such as the present. And since for a good many months buying "from hand to mouth" has been the order of the day, this need not be viewed with alarm.

Steel and copper on the other hand have maintained their former levels. Steel orders are being maintained in good volume, and the steel industry has reason to feel the confidence it is showing.

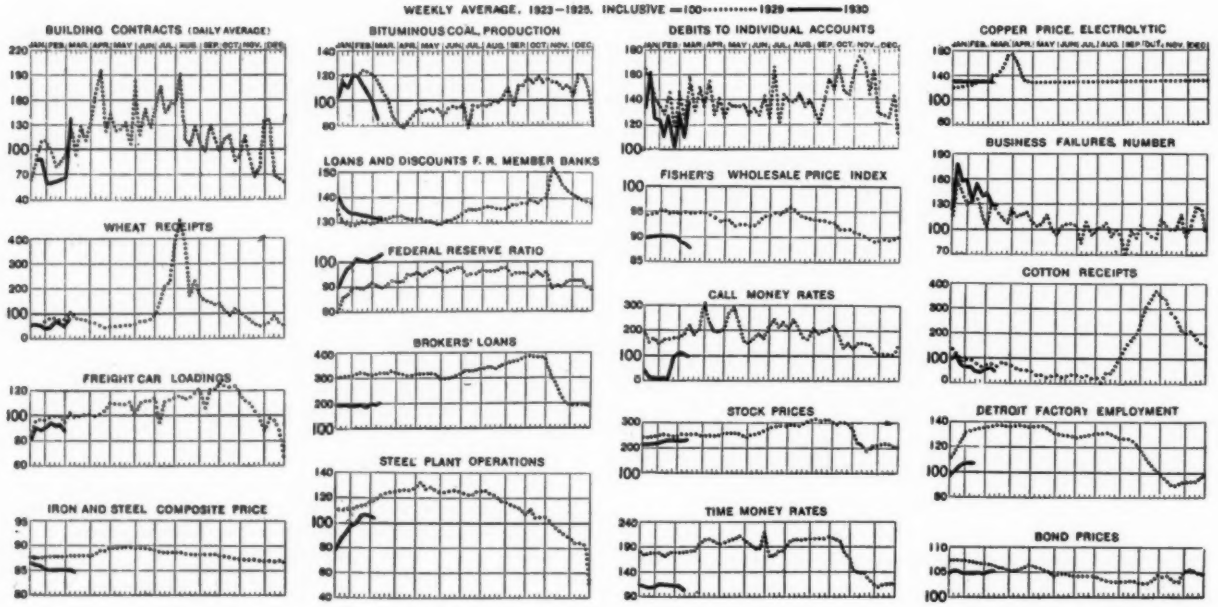
The employment situation is a little better, and the very warm weather that we have been having will, if continued, result in improved retail store business.

Money rates have undergone little change, although it is expected that our own reserve rate will be lowered to agree more closely with the Bank of England rate. It is doubtful whether the lowering of our rate would materially increase speculation, as it will take some time for many of the speculators caught in the last crash to again develop a taste for gambling on quotations. The lower rate on the other hand would tend to prevent gold imports and would make still more funds available for municipal construction.

Building and engineering contracts in the 37 states east of the Rocky Mountains reached a total of $317,053,000, according to F. W. Dodge Corporation. The territory covered by these records includes approximately 91 per cent of the total construction volume of the country. Compared with the January 1930 total of $323,975,200 there was a decrease of only 2 per cent; and February 1929 was 12 per cent below January 1929. The first three weeks of last month had very low contract records, but this was offset by a very sizable increase in the closing week of the month, indicating the beginning of the normal spring revival of construction operations. The February 1930 total was 12 per cent under that of February 1929. Since January of this year fell 21 per cent below January 1929, the February record is an indication of improvement. Total contracts awarded during the first two months of this year have amounted to $641,028,200, being a decrease of 17 per cent from the first two months of last year.

Contracts for both residential and non-residential building gained over last month, while public works and utilities projects were in somewhat smaller volume. This last named class, however, accounted for 27 per cent of the February total, amounting to $85,824,900. Residential building contracts

WEEKLY BUSINESS INDICATORS



amounted to $74,763,200, or 24 per cent of the total; commercial building, $72,903,200, or 23 per cent; industrial building, $33,499,300, or 10 per cent; educational building, $21,238,800, or 7 per cent.

Contemplated new work of all kinds reported in February amounted to $780,209,400, being 1 per cent over the amount reported in February 1929, although 46 per cent under the record volume of contemplated work reported in January of this year.

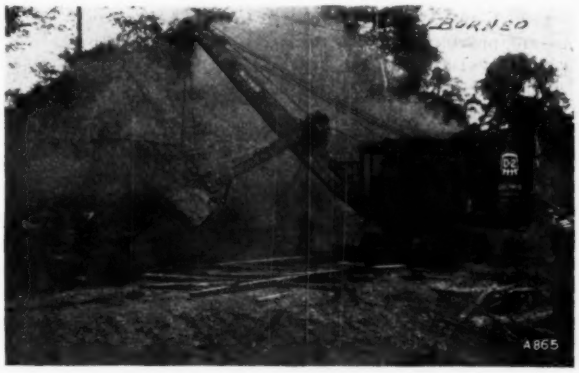
Some have registered disappointment that the large contemplated construction program is not in full swing at this time. This seems to us to be a rather unreasonable attitude, for it obviously takes some little time to get such work under way. Estimates of construction work for this year stand as formerly outlined. They promise a satisfactory year for the builders.

"Big Fellow"

Big Fellow by Dorothy W. Baruch with illustrations by Jay Van Everen, published by Harper and Brothers, 49 East 33rd Street, New York, is the story of a "Road Making Shovel" for children of ages five to ten. Little boy Ned with his bright, new, blue bike is very much interested in the building of the new smooth road, especially the work of "Big Fellow," the shovel. After the paver has finished Ned rides down the road to the factory where the shovel was built. It's a well-written little book, and should certainly be most interesting to little chaps of five to ten years, especially lads whose dads are excavating men. Most appropriately the page illustration reproduced on the outer cover shows a real "Big Fellow" — that we'd guess was sketched from a Bucyrus-Erie 320-B 8-yard electric shovel in the strip pit of the Pittsburg and Midway Coal Mining Company.

Difficulties of Road Building in Borneo

The accompanying photographs show a job of road building through the jungle near Balikpapan in Borneo. Two Bucyrus-Erie D-2 shovels are being used for grading the roadway, and very favorable results are reported. The D-2's are fully as capable in far-off Borneo as they have been proved on Federal,



Rolling out the twelve-ton stump of a giant of the Borneo jungle.

State and local highway grading in the United States. One of the great difficulties encountered on this Borneo road job are the enormous trees that must be put out of the way. The trees themselves are cut down by natives, and the stumps are dug out by the shovels. In one of the photographs reproduced on this page the D-2 is putting out of the way a stump that weighs about twelve tons.

Working within a hundred miles or so of the equator, roadbuilders on this island of the Malay Archipelago must conquer added problems.

Highway Forecast 1930

To the information published in the January and February issues of *The Excavating Engineer* regarding highway construction plans for 1930, we can now add the following:

Canada

Alberta

A highway and bridge construction and road maintenance program for the province of Alberta, involving a total expenditure of $5,250,000 during the fiscal year which begins April 1, 1930, has been proposed to the Legislature. The estimate provides for $2,000,000 for new construction of main highways; $750,000 for construction of district highways and $150,000 for secondary highway construction. For bridges a total of $960,000 is allotted. For the maintenance of main highways, bridges and ferries the amount of $1,095,000 is estimated, and for the maintenance of district highways the total is placed at $500,000. The largest increase in these estimates over the previous year is for the construction of main highways, for which the estimate is increased $500,000. All construction items will be appropriated for from the capital account of the province.

New Brunswick

$10,000,000 is to be requested from the Provincial Government of New Brunswick, to build hard-surfaced highways throughout the province.

Newfoundland

During 1930 Newfoundland purchased in the United States additional highway equipment including 80 tractors as well as self-propelling road-making and grading machinery. During 1930 it is planned to reconstruct 364 miles of motor roads previously built, and to extend the highway from Avalon Peninsula to Fortune Bay. Nearly 100 miles of new roadway are under construction. Proposal has been made to complete a 600-mile highway across the Island of Newfoundland to facilitate the movement of traffic across Cabot Strait, and to encourage the transportation of motorists who may desire to travel from the United States and Canada to Newfoundland by road. The cost of this project is such that its completion is contingent on the success of the additional external loans that may be floated by the Government.

Quebec

The year 1929 set a record for road construction in the Province of Quebec. During that year, the Department of Roads maintained 10,195 miles of improved roads and built 1,584 miles of new roads, 417 miles of which were on main highways and 1,167 miles were roads of the second and third classes. The season of 1929 also witnessed the inauguration of the permanent paving program for which the Legislature had authorized an expenditure of $17,000,000 over a six-year period. This program provides for 900 miles of permanent pavement on main highways in the districts of Montreal, Quebec, Hull, Sherbrooke and Chicoutimi. In 1929 the Department of Highways paved 124 miles and executed preliminary work on 94 miles. The work accomplished means that at the close of the year 1929, thirty-eight per cent or 12,502 miles of the rural roads of the Province, totalling 32,354 miles, are permanently improved roads. Construction and improvement activities will be fully maintained in 1930.

Mexico

The Mexican Department of Communication has announced that the Federal highway program for the next five years involves an expenditure of 80,000,000 pesos ($39,000,000 United States currency), which will be distributed over that period as follows:

1930	12,000,000 pesos	($5,850,000)
1931	14,000,000 pesos	($6,825,000)
1932	16,000,000 pesos	($7,800,000)
1933	18,000,000 pesos	($8,775,000)
1934	20,000,000 pesos	($9,750,000)

The Federal highways to be completed during the five-year period and the approximate cost of each, are given as follows: Completion of highway from Laredo to Mexico City, 12,000,000 pesos ($5,850,000); Highway from Toluca to Guadalajara, 12,000,000 pesos ($5,850,000); Section of Pan-American Highway from Pueblo to Oaxaca, 6,000,000 pesos ($2,925,000); Trace of the highway from Oaxaca to Tehuantepec and then to Guatamalan frontier 12,000,000 pesos ($5,850,000); Road from Tuxtla Gutierrez to Merida, 10,000,000 pesos ($4,875,000); Ciudad Victoria to Guadalajara, 6,000,000 pesos ($2,925,000).

England

England's "road fund works" program provides for an expenditure of $133,830,000 in five years. It is estimated that the Road Fund liability in respect of the schemes approved under the trunk-road and five-years' programmes or in an advanced stage of negotiation will be approximately $80,000,000, and that the employment to be afforded by these schemes will be equivalent to the employment of 100,000 men for a year.

France

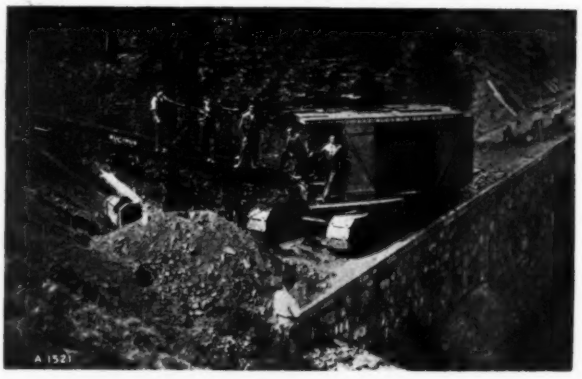
The French Government will spend 777,000,000 francs, or about $30,460,000, on national highways in 1930, if the highway budget, already passed by the Chamber of Deputies, is approved by the Senate.

Although the proposed budget is somewhat under the sum of 865,010,000 francs, or about $33,900,000, spent on national roads in 1929, the new figures do not include the special funds of about $24,000,000 which is included in the five-year prosperity program of the French Government and which is to be spent on national highways in repair work and the elimination of grade crossings.

Western Australia

A public works scheme for the construction of subdivisional roads to facilitate transport and communication in group settlement areas has been proposed. Each year's program is submitted as a separate scheme under the agreement. A total amount of £341,087 ($1,665,570) has been advanced covering the program for the three years.

Crossing a Bridge in Spain



Sr. Enrique Laurin sends us the above photograph showing how they handle grading in Spain. This Bucyrus-Erie Gas + Air is crossing a bridge 3.40 meters wide (11.15 feet). Senior Laurin, who is standing at the right on the machine, remarks that in the year the machine has been in service it has required no repairs whatever and has given excellent satisfaction.

Western Crawler Wagons Keep Down Hauling Costs

The secret of this lies in the fact that Western Crawler dump wagons have an enormous capacity and fully utilize the speed and power of the modern crawler-type tractor.

Further, these wagons offer a means of transportation that will enable you to keep your loading units working to capacity. They are fast, sturdy and reliable. The broad Athey Truss Wheels, which carry the load, are an almost frictionless type of track-laying wheel that permits these huge tractor wagons to operate through mud, sand or over rough ground. Their ability to work under nearly all conditions at tractor speed is increasing production and lowering hauling costs to the profit of their users.

Write for Bulletin 29-QK

Western Wheeled Scraper Company
Aurora, Illinois, U. S. A.

WESTERN

DUMP CARS AND GRADING EQUIPMENT

In writing to Western Wheeled Scraper Co. please use post card bound in the center of this number.

EQUIPMENT YOU OUGHT TO KNOW ABOUT

New Tractor Shovel

The new Trackson Shovel, displayed for the first time at the Atlantic City Road Show, will be found by contractors, highway builders and other industrial operators to be efficient and economical for such jobs as light excavating, stripping, levelling, spreading, bulldozing and carrying dirt, cinders, crushed rock, etc. It will be found suitable for sand and gravel pits, quarries, rock products manufacturers, open cut coal mines, and other places where such equipment is needed.

The new tractor shovel, built for use with McCormick-Deering tractors by the *Trackson Company, Milwaukee, Wisconsin,* is made of special, super-strength steel castings and heavy, reinforced structural steel, according to the makers. It will stand up under the hardest usage, and can be used in digging into hardpan, rocky soil, and very abrasive materials.

The digging range is from 8 inches below ground to 40 inches above, and as the load is raised the bucket tilts back preventing spillage.

This new equipment may be mounted either on wheel tractors or on crawler units, as shown above. Mounted as shown, it has an overhead clearance of only 69 inches, enabling it to handle such jobs as digging drain pits in garages and excavating under buildings. In writing to the Trackson Company for an attractive circular, Form No. 222, please mention this magazine.

Relay Motors Announce New Truck Model

The new six-cylinder Model 50D (S. A. E. horsepower rating of 33.75) rated two, two and one-half, and three tons is announced by *Relay Motors Corporation, Lima, Ohio.* Built in three wheelbases, 139½, 161 and 185 inches, it is particularly adaptable to dump truck operation where short turning radius is a necessity.

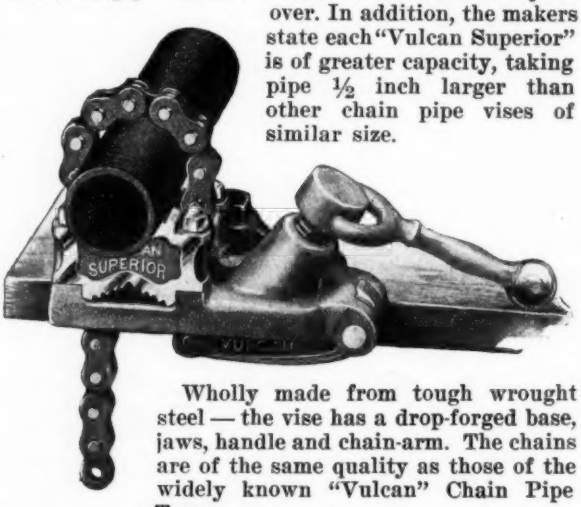
To meet adequately the demands of all types of service, the 50D transmission has five speeds forward and two in reverse. The rear axle is Relay's own design — a pendulum suspension — different from any other rear axle, and, according to the manufacturer, the reason for some of the distinct advantages with Relay trucks. This pendulum suspension which permits the truck to move horizontally (forward and backward) with respect to the wheel center, is of particular importance in reducing both the number of road shocks and their intensity. It also keeps the wheels in contact with the ground by providing a

force in the direction of the pendulum, thus increasing the traction.

Additional features of the new Model 50D may be learned through writing the manufacturers.

Williams' New Chain Pipe Vise

The new "Vulcan Superior" Vise recently placed upon the market by *J. H. Williams & Co., Buffalo, New York,* offers "overhead" adjustment—the handle is ON TOP where it's easy to operate — and reversible jaws for longer life — when the teeth first in use wear, simply unscrew the bolts and turn the jaws over. In addition, the makers state each "Vulcan Superior" is of greater capacity, taking pipe ½ inch larger than other chain pipe vises of similar size.



Wholly made from tough wrought steel — the vise has a drop-forged base, jaws, handle and chain-arm. The chains are of the same quality as those of the widely known "Vulcan" Chain Pipe Tongs.

Attractively finished in chrome-plate and furnished in two sizes for ½-inch to 4½-inch pipe. The vise is fully guaranteed by the makers.

SHOTS FROM THE FIRING LINE

National Highway Commission of Mexico to Meet April 20 to 27

According to information received from the American Road Builders' Association, a large delegation from the United States will attend the third Highway Congress of the National Highway Commission of Mexico, which will be held in Mexico City, April 20th to 27th.

Arrangements are being made to provide a special train for those who will visit our Southern neighbor at the time of this Highway Congress. The special train will leave from Washington, D. C., and will pick up additional passengers at various points between Washington and the border. All reservations will be made by the Chairman of Transportation of the American Road Builders' Association, National Press Building, Washington, D. C., to whom correspondence should be directed by those desiring further information.

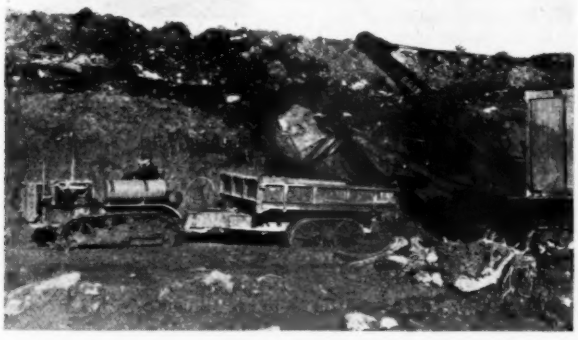
Canada

Nova Scotia Notes

BY R. J. STAPLES

The Nova Scotia Power Commission recently completed their hydro-electric development at Tusket Falls, Yarmouth County, Nova Scotia. The power development will supply the town and county of Yarmouth and also Cosmos Imperial Mills, there being installed turbine capacity of 3000 horse power which will supply an initial demand of 5,000,000 kilowatt hours per year.

Excavation for the project totaled 145,130 cubic yards, consisting of 18,422 yards of rock, 116,058 yards of earth and 10,650 cubic yards of mud. Three Bucyrus-Erie ¾-yard



steam shovels handled the excavation and waded through the solid rock, sand and boulders successfully, although a good deal of the excavation was very wet. Included in the equipment on the job were three Caterpillar 30's and two Athey Truss Wheel wagons four to five-yard capacity. The accompanying illustration shows one of the B-2's loading a caterpillar-drawn Athey. Average length of haul was 200 yards. Superintendent H. B. Dibblee was in charge of the construction operations.

New England Notes

BY J. C. ALEXANDER

O'Neil Brothers of Hartford, Connecticut, have started a large excavating and grading job for the New Veterans' Home in West Hartford. They have just placed their Type 1035 Bucyrus-Erie on the work. Their four-year-old Gas + Air is going just as strong as ever and loads the trucks out just as fast as they come in.

Frank Arrigoni & Sons have a road job at Cromwell, Connecticut. This is a heavy fill job. The filling is hard pan. They are using a Model 700 P. & H. and D. Arrigoni's Bucyrus-Erie 41-B steamer, and the dirt is certainly moving. This is an interesting sight.

Callan Construction Company of Bristol, Rhode Island, were low bidders on a large road job in Vermont recently.

Louis Julian is going to work with his Gas + Air shovel for P. H. Holland of Lawrence, Massachusetts, on the Newburyport Turnpike job.

The above illustration shows a Bucyrus-Erie Type B-2 steam shovel owned by **C. B. Lindholm of Pittsfield, Massachusetts,** on a 50,000-cubic-yard excavating job in hard pan. There was a large number of boulders in the material, as you will note. This excavation was on street development for Wm. Goetz, and the B-2 turned out an average daily production of 600 cubic yards in a nine-hour shift. Mr. Lindholm is a prominent civil and construction engineer of Pittsfield.

The accompanying illustration shows a Bucyrus- Erie Type 1030 electric clamshell handling sand for the **Sherman Sand and Stone Company, Plainville, Connecticut.** The machine is called upon to handle 400 yards of sand a day in a nine-hour shift. This company reports that they are very much pleased with all types of Bucyrus-Erie machines they are now using, and find that they fit in very nicely with the work they are doing. They prefer the steam machines for quarry work and gasoline or electric for sand.

Buffalo Notes

BY D. E. WHITE

The annual convention of the New York State Highway Chapter of the Associated General Contractors of America was held at the Hotel Syracuse, March 12th and 13th. While a large number of New York State Chapter members were sojourning in the South, the attendance was very large. The retiring president, Louis Mayersohn, was presented with a beautiful desk-set, and congratulations are in order for John H. Bolton, the newly elected president who, we believe, is thoroughly capable of directing the activities of the A. G. C. for the coming year. The surprise of the banquet was the speaking of Sir James Alexander, Glasgow, Scotland, alias John Daniels, Boston, who stood the boys on their heads with his impersonations and clever stories.

Now that the A. G. C. convention is over, the boys are back home and on the job, and we can look forward to plenty of activity in New York State.

THE MEASURE of WIRE-ROPE QUALITY IS THE SERVICE IT HAS RENDERED

Which wire rope to use on your equipment—which brand will give the longest and most economical service—may be best determined by past records of performance established under similar operating conditions. This and the reputation of the maker are of paramount importance.

FOR over half a century American Wire Rope, made exclusively by the American Steel & Wire Company, has demonstrated its superiority—proved beyond question that its tough, flexible and abrasion-resistant nature is the best insurance against breakdowns and costly delays.

Regardless of your particular problem, you will find an American Wire Rope exactly adapted to its economical solution. Consult our nearest branch office or distributor to get the right rope for your purpose.

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SHOTS FROM THE FIRING LINE — Continued

Veterans

The John Johnson Construction Company of Buffalo, New York, believe they are the holders of several records when it comes to having men with years of experience engaged on their work. On a sewer job here in Buffalo, they are using a machine now nearing its eleventh birthday — a Type B Bucyrus-Erie on traction wheels, No. 800, equipped with a 19-foot 6-inch boom, and 28-foot dipper stick. The "old girl" nearing her teens is shown in the accompanying illustration, with Mr. Prefontaine at the levers in the lower view.

The operator is **Ephren Prefontaine** of 210 Potomac Avenue, Buffalo, New York. Mr. Prefontaine, 77 years young, was born December 29, 1853. His first experience on shovels was craning an old Otis shovel in 1879, and since that time he has operated Vulcans, Little Giants, Style "A" Marions, as well as most of the machines in the Bucyrus-Erie line. He has operated these machines all over the United States on different railroad jobs. He finally settled down in the City of Buffalo in 1907 and has been located here ever since.

Mr. Prefontaine's fireman is Charley Lincoln of Buffalo, New York, who is 63 years old, and the pit-man is George Coates, a boy of 67. The inspector on this job is Tom Cosgrove, who is 72 years young and has been connected with construction work for the past fifty years. Two sons of Mr. Prefontaine, Ed and Jack, 46 and 44 years old, are both operators.

In our travels throughout the country we do not believe we have met an operator who is actually operating every day who is anywhere near the age of Mr. Prefontaine.

Bill Johnson of the above Company is the superintendent on the present job, and informed me that the reason they are using their Bucyrus-Erie on this sewer job is that they found it a lot cheaper than trying to do the excavating with a clamshell outfit.

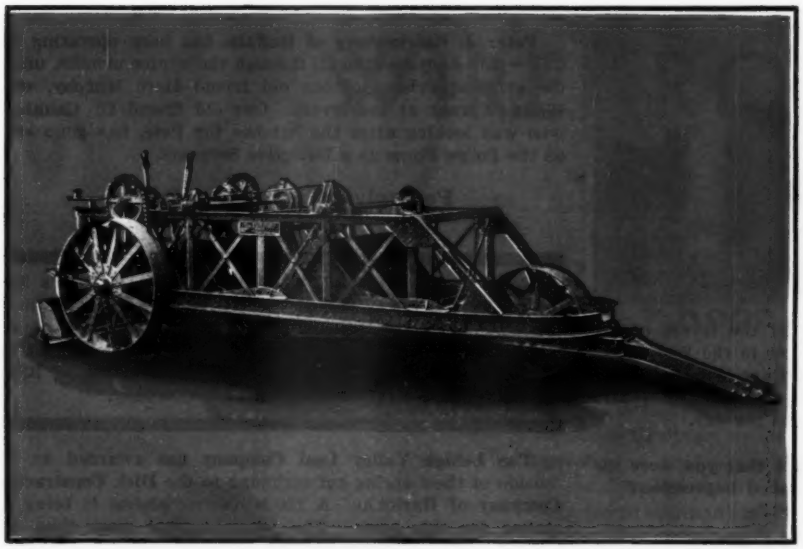
A few of our New York State contractor friends, of whom we are envious, as they are **spending the winter in Florida** are Toppy Johnson of the John Johnson Construction Company; Ed and Charlie of Charles Shaffer and Sons — understand Ed caught a fine sail fish — Bill Loose of Tonawanda, John Irwin of Lockport, as well as our old friend Bill Gallagher of Medina, New York.

Her (just operated on for appendicitis): "Oh, doctor, will the scar show?"

Doctor: "Not if you are careful."

The Wagon Grader

a self contained dirt moving unit that



–Digs

–Loads

–Hauls

–Dumps

and

–Spreads

A contractor once told us that his conception of an ideal dirt moving unit was one which would *do a complete job.*

The Ball Wagon Grader does just that—and far more efficiently and at a lower cost per yard of dirt in place than any other machine known to dirt movers.

We would like to tell you about the hundreds of grading jobs which the Ball Wagon Grader has successfully handled.

We would like to show you how the Ball Wagon Grader can do your grading job quicker and at a saving.

More* BLAW-KNOX *dirt moving units

Clamshell Buckets

Dragline Buckets

You are interested in having this information—so please mail the coupon.

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Send me complete information on
Ball Wagon Grader ☐ Clamshell Buckets ☐
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BLAW-KNOX

In writing to Blaw-Knox Company please use coupon or post card bound in the center of this number.

SHOTS FROM THE FIRING LINE — Continued

Operator Coleman is shown above at the levers of the Bucyrus-Erie Type 1030 two-motor electric in the Watertown quarry. Quarry foreman Darby is in charge of this operation, with Charles Getman as Superintendent. The quarry is a small one with an output of 250 tons per day.

"Did you tell her when you proposed that you were unworthy of her? That always makes a good impression?"

"I was going to, but she told me first."

Minister: "Let me hear how far you can count."

Willie: "One, two, three, four, five, six, seven, eight, nine, ten, Jack, Queen, King."

Bero Brothers, Engineers and Contractors, of North Tonawanda, have had their Bucyrus-Erie Gas + Air crane rented out on a sewer job all winter. Sil Falk has been doing the operating.

Stapell, Mumm & Beals, of Hamburg, New York, are all set to go this Spring. They have just completed overhauling all of their equipment. Bill Staples' leg is much better and Fred Mumm is recovering in great shape from his recent operation.

Peter J. Knickenberg of Buffalo, has been operating his Gas + Air Bucyrus-Erie all through the winter months, under the able supervision of our old friend Herb Murphy, with Wally Warner at the levers. Our old friend Cy Callahan, who was looking after the batches for Pete, has gone back on the Police Force as a Detective Sergeant.

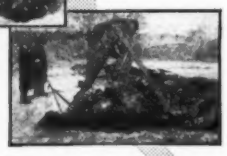
Pennsylvania Anthracite Region

BY T. H. BARRETT

Eddie Sheetz of West Hazleton, one of Hazleton's best beloved shovel operators, died early last month of ulcer of the stomach. He will be remembered for his ability to make friends, for his loyalty to his employer, Bob Bazley, and for his excellent work in operating the 320-B at Crystal Ridge stripping of the Cranberry Creek Coal Company.

The Lehigh Valley Coal Company has awarded an extension of their spring cut stripping to the **Dick Construction Company** of Hazleton. A 120-B electric shovel is being installed for this work. The job will total more than five million cubic yards.

The Hudson Coal Company of Scranton has asked for bids on a small stripping at Olyphant, Pennsylvania.



Wins Again!

In competitive tests against other buckets,

WILLIAMS "Champion" *sells itself*

THIS time in Chicago, the new WILLIAMS "Champion" demonstrates its ability to outdig any other bucket made.

The contractor who was making this test found that, right from the start, the WILLIAMS "*Dug rings around our other buckets.*"

Guaranteed to *Outdig* and *Outlast* any other bucket you have

Inspect the new WILLIAMS "Champion"—watch it dig—find out for yourself which is the most powerful bucket built.

21 improvements give the new WILLIAMS "Champion" extra Digging Power, Speed and Stamina. Its all-welded scoops have the scientifically correct "line of least resistance." The sturdy corner bars have extended brackets that add digging leverage. New head, even narrower than on previous "Champions."

AN UNEQUALLED VALUE. Write for Bulletin "SP-25" showing the improvements that have made it possible to put the new WILLIAMS "Champion" on your work with a definite guarantee to show you *greater digging power and speed.*

G. H. WILLIAMS COMPANY
603 Haybarger Lane, Erie, Pa.

WILLIAMS
FAST-DIGGING BUCKETS

Branch Offices:
New York, Pittsburgh, Chicago

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WIRE ROPE

SELECTIVITY — the Key to Lower Rope Costs

There's a Hazard Rope for every class of service

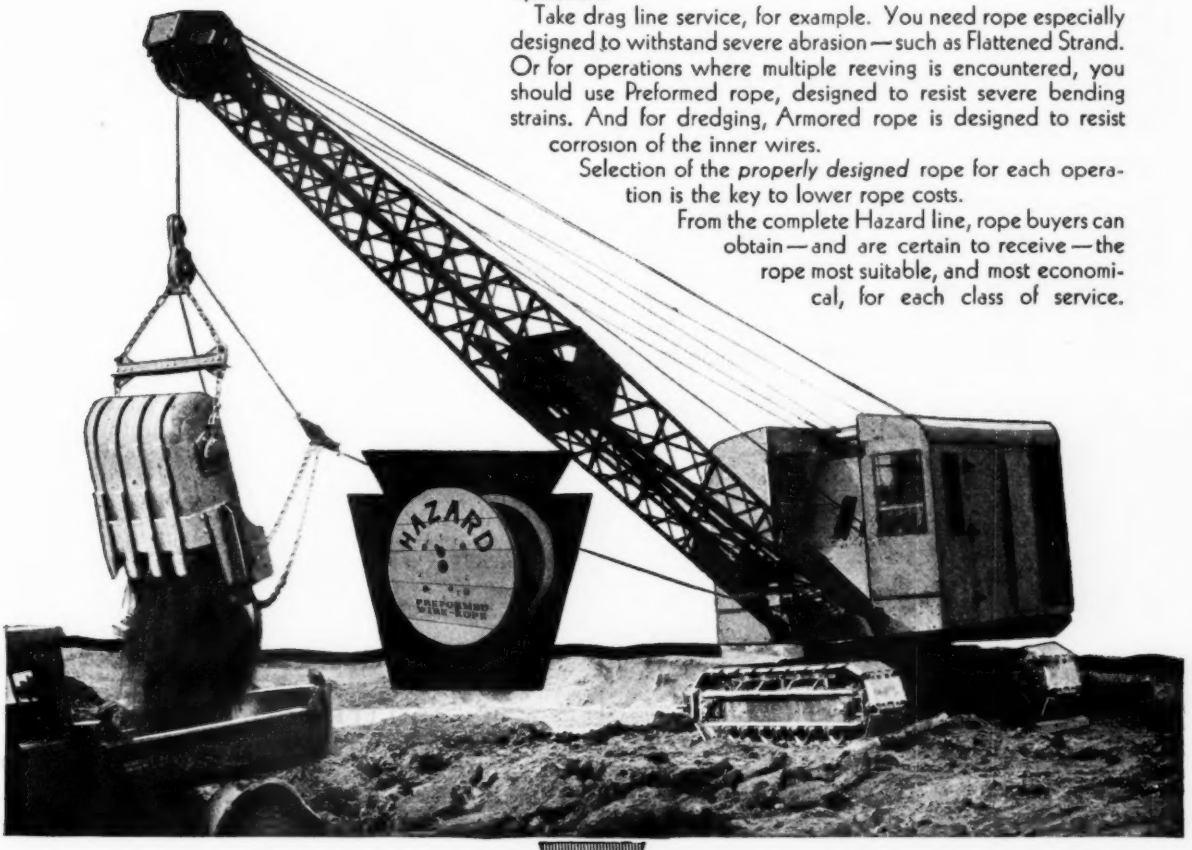
FLEX-SET Preformed Wire Rope
Armored Wire Rope
Improved Flattened Strand
Bear Cat Rope
—and all standard constructions

THERE is a distinct advantage for you in buying wire rope from the company that makes a complete line. This advantage is the ability to obtain *properly designed* rope for each particular operation.

Take drag line service, for example. You need rope especially designed to withstand severe abrasion—such as Flattened Strand. Or for operations where multiple reeving is encountered, you should use Preformed rope, designed to resist severe bending strains. And for dredging, Armored rope is designed to resist corrosion of the inner wires.

Selection of the *properly designed* rope for each operation is the key to lower rope costs.

From the complete Hazard line, rope buyers can obtain—and are certain to receive—the rope most suitable, and most economical, for each class of service.



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Johnston Boilers are built to meet all requirements, and are fully guaranteed.

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HUG

Maintenance Model

THE Hug Model 67 Roadbuilder is designed for Highway and City Street Maintenance, for material delivery and for an all purpose contractor and roadbuilder truck.

The usual features, characteristic of Hug Design, make this an ideal unit for maintenance work. A five-speed transmission with overgear in fifth, and an extra low gear, and a Buda six-cylinder engine, provide the necessary power and speed. Short wheelbase, the Hug Multi-Cushion Triple Compensating Spring Design, the sturdy I-beam frame and double reduction rear axle are additional Hug service features.

Hug Roadbuilder Trucks with their specialized design have established an enviable reputation for ability, ruggedness and efficiency. Let them help you meet each difficult hauling problem profitably.

THE HUG CO., Highland, Illinois

SHOTS FROM THE FIRING LINE — Continued

The Rhoads Contracting Company of Ashland has secured extensions of their strippings at Mid Valley and Maryd. They are operating five draglines on various jobs.

The Philadelphia and Reading Coal & Iron Company has started their new breaker at Locust Summit, and when operating at near capacity it will undoubtedly be the low-cost processing plant in the anthracite region. Two Bucyrus-Erie 50-B electric shovels are furnishing coal from the Locust Summit and Locust Gap stripping.

Ohio Notes

BY M. W. KILCORSE

The accompanying illustration was taken in the Toledo Supply yard of the **Builders & Industrial Supply Company** where they are using their Bucyrus-Erie 1030 clamshell to charge their 36-cubic-yard, 3-compartment Butler steel bin. The bin is equipped with a special Butler transit mixer charging device. R. A. Barnes, President of the Builders & Industrial Supply Company, is shown standing on one of the foundation timbers of the bin. The plant is now set up about one hundred miles from Toledo, where it is furnishing all of the mixed concrete for a 17-mile conduit job, the plant being moved along as the job progresses.

NOVO

FLUD-LITE LIGHTING UNITS

For lighting cranes—shovels—construction jobs—cheaply and dependably—compact—light in weight—with standard generator and Novo Rollr Engine. 1¼ to 25 K. W.

Please send me the special folder

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Clarence E. Bement, *Vice-Pres. & Gen. Mgr.*

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WIRE ROPE

Look to Your Wire Rope

If your operating costs are too high it may be that your equipment is shut down too often for rope replacements.

"HERCULES" (Red-Strand) Wire Rope has proved itself a money saver because its sturdiness enables it to handle a very large tonnage, and its long life makes renewals less frequent. Its uniform durability is a real factor in providing operating economy and in speeding up work.

If you will tell us how you use wire rope, we shall be glad to help you select the correct construction for your particular working conditions.

Made Only by

A. Leschen & Sons Rope Co.

[Established 1857]

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In writing to A. Leschen & Sons Rope Co. please use post card bound in the center of this number.

40.2% *increased service with* Tru-Lay

Compare 317,326 yards with Tru-Lay *Preformed* Wire Rope against 226,238 yards with ordinary wire rope . . . this is a typical report on Tru-Lay performance, sent to us by an Indiana concern operating a Marion Model 350 Electric Shovel.

The Reason:

Tru-Lay is a *Preformed* wire rope — *not a twisted rope.* Each wire and strand is helically shaped . . . they lie naturally in position . . . the internal stress and "crankiness" are eliminated.

Prove this to yourself. Handle a piece of Tru-Lay *Preformed* Wire Rope. Note its flexibility. Note that the ends do not require seizing. The fact that *internal stress* and "crankiness" are removed accounts for Tru-Lay's longer service in shovel operation.

Get the facts. If you are not familiar with Tru-Lay *Preformed* Wire Rope, let us send you a sample length for your inspection. Address:

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New York Central Bldg., 230 Park Ave., New York, N. Y.

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An Associate Company of the American Chain Company, *Incorporated*
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PREFORMED WIRE ROPE TRADE TRU-LAY MARK

SHOTS FROM THE FIRING LINE — Continued

Detroit Notes

BY H. A. TITUS

Lennane and McIlvenna, live-wire Detroit contractors, are at present using their Bucyrus-Erie 1020 (½-yard gasoline shovel) as a hoist at the Conner's Creek pumping station. During the past summer they used this same machine to grade a good many Detroit alleys. The above illustration shows the 1020, Fred Gores, operator, cutting through an alley between McGraw and Dennison. Operator Gores tells us that he finished a one-block alley with 467 yards in two days with the machine, and adds that the 1020 is the best machine he has ever handled, though he has used them all. Working a nine-hour shift the machine uses less than 35 gallons of gasoline, according to Mr. Gores. Standard Oil Company gasoline was being used on the alley work, it being delivered in drums from which the night watchman filled the fuel tank. Four 7-yard Macks and two 3-yard Macks were used on the job illustrated, and even though the haul was short operator Gores and the 1020 kept the trucks' drivers hustling.

GREDAG
REG. U.S. PAT. OFF.
LUBRICANTS

TAKE THE GRIND OUT OF GEARS—ADD LIFE TO BEARINGS

Demanded by operators whose practical tests cover many years of perfect service in all climates, under the most severe conditions.

Used and recommended by machinery manufacturers, on sound engineering advice and long experience.

Write for our book, "Industrial Lubrication".

ACHESON GRAPHITE CORPORATION
Unit of Union Carbide UCC *and Carbon Corporation*
NIAGARA FALLS, NEW YORK

Differential 3-Way Dump Body Mounted on La Plante-Choate Crawler Wagon

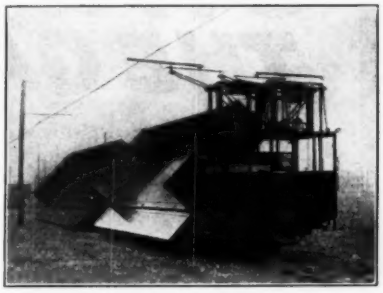
An ideal piece of equipment for use in connection with tractors. An economical method for hauling stone, earth, and all other materials where the roads are soft and impassable for other types of equipment. Body quickly dumps the load to right, left, or rear.

DIFFERENTIAL
HAULAGE SYSTEMS

Whatever your haulage problem, Differential equipment will fit the job. The Differential line includes Differential Locomotives in various sizes, Differential Air Dump Cars in various sizes, 3-way Crawler Wagons and 3-Way Dump Bodies for auto trucks. Give us the details of your haulage problems and let us recommend the proper equipment to handle the job.

Differential Locomotives

Carry a load on the locomotive—Differential Locomotives carry a pay-load instead of ballast. The photograph at the right shows a Differential Locomotive (electric) rated at 100 tons loaded and 50 tons light. Differential Locomotives are furnished in straight electric, gasoline, Diesel, or gas electric types. Various sizes in each type. Send for illustrated bulletins.



THE DIFFERENTIAL STEEL CAR CO.
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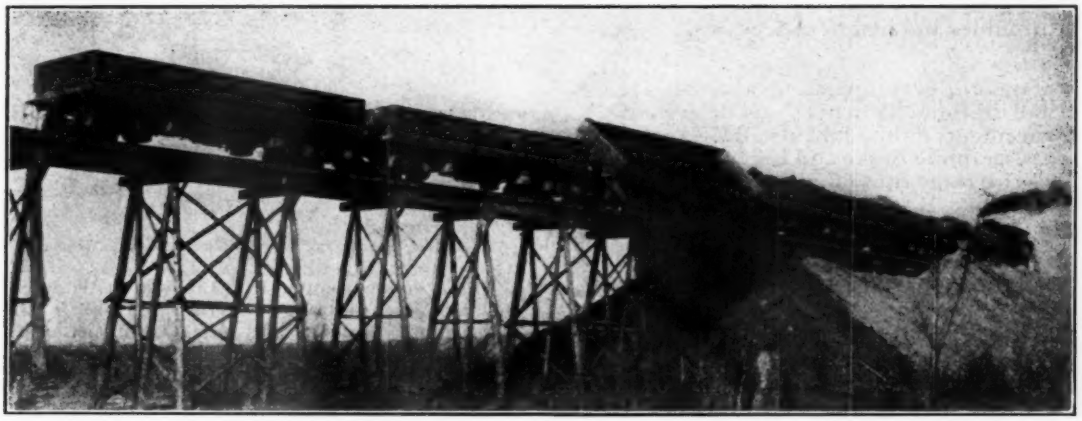

Differential Air Dump Cars

Rare combination of low height, quick dumping, stability, and ruggedness. No locking mechanism to get out of order and cause accident, delay and expense. No chance for accidental dumping.

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STAND THE GAFF

ON the toughest jobs, where the load is heaviest and the strain is greatest — Gatke Moulded Brake and Friction Blocks stand the gaff!

Wherever heavy-duty machinery must do a giant job — steam shovels, drag lines, dredges and hoists — Gatke Asbesgraphite products reduce friction troubles and maintenance costs.

Smooth, even operation and control all the time! To avoid costly delays and accidents on the job, install Gatke Asbesgraphite Brake and Friction Blocks —we carry sizes for all types of equipment.

Mail coupon below for Special Bulletin.

THOMAS L. GATKE,
228 N. La Salle St., Chicago, Ill.

Please send us latest bulletin on Asbesgraphite Brake and Friction Blocks.

Name_____

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SHOTS FROM THE FIRING LINE — Continued

Virginia Notes

Operator C. W. Thompson of Roanoke, Virginia, sends us the above picture showing the machine he is operating, grading on Route 23 between Floyd and Christiansburg, Virginia. Edward Grubb is the lad who keeps up the steam.

Kentucky Notes

Here we see operator J. E. Cranwell at the levers of the **Gellum Cooper Company's** Bucyrus-Erie Diesel + Air cutting through the Kentucky hills near Cumberland, and loading into Hughes-Keenan "Iron Mules." Needless to say Mr. Cranwell is most enthusiastic about the snappy action and easy handling of the DA-2.

Lady (phoning music store proprietor): "I have just had my radio installed and it is working fine, but the orchestra in Cincinnati is playing too fast. Is there any way I can slow it down?"

In writing to Thomas L. Gatke please use post card bound in the center of this number.

Just tear in and Dig!

The machine in this picture later dug out 15,000 yards of top soil for spreading where this grading had been done—at a cost of 7c a yard. Pick digging and propeller feeding working with a continuous crowding drive (a Haiss patent) puts this machine in a class by itself, for shallow grading.

Let us send you Bulletin 629, and you can judge the Haiss Excavator by the jobs it has done. They're pictured.

"up to 2 cu. yds. per minute"

GEORGE HAISS MANUFACTURING CO., INC.
144th STREET and PARK AVENUE, NEW YORK, N. Y.
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IT DIGS

Spots the Load
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THE
PAGE DRAG SHOVEL
gives the contractor all he could ask for—speed—clean cutting—no premature spilling—more work per day—can be fitted to all standard machines.
Write for Bulletin

PAGE ENGINEERING CO. 844 RUSH ST. CHICAGO – ILL.

DRAG SHOVELS—DRAG LINES—BUCKETS—SLACK LINES—DIESEL ENGINES

Ton after ton of excavation, all dependent upon the chain that must do the lifting job day after day. It's a gigantic task, where one broken chain can cause untold damage.

It's on work like this that chain tougher than the ordinary must be used to get the best results, and TAYLOR-MADE Chain is what you need.

Order TAYLOR-MADE Chain from the stock of your local mill supply house.

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TAYLOR MADE
HAND-ELECTRIC AND MACHINE WELDED CHAIN

SHOTS FROM THE FIRING LINE — Continued

Missouri Notes

BY H. H. BUCHANAN AND H. E. SNIPE

Gaines Brothers, Jefferson City, have a nice grading project of about thirty-five miles near Westphalia, Missouri, and are using their two Bucyrus-Erie Type GA-2 Gas + Air shovels on this job, operating each machine two ten-hour shifts. Mr. Fountain and Mr. Sullivan are making the dirt fly on one of the outfits, and the Moore brothers, operators, are also doing the same on the other outfit. Gaines Brothers have subcontracted about eleven miles of grading to the Haller Construction Company, Dallas, Texas.

McNamee Brothers, Anglum, have moved their Bucyrus-Erie 41-B, 1¼-cubic-yard steam shovel in on a bridge excavating job across the Osage River near Bagnell. Ed. Baum is handling the levers on the 41-B.

Brooks Construction Company, Dallas, Texas, has about finished the road-grading job near Eldon, Missouri, and will soon be moving their equipment to a new grading project near Columbia. They are using a Type B-2 Bucyrus-Erie steam shovel on this job, and J. W. Pitett is at the levers making the dirt fly. Mr. Martin is General Superintendent in charge.

Stone & Webster Engineering Corporation, prominent engineering contractors of Boston and St. Louis, are well under way with the dam project at Bagnell. They are using their new Bucyrus-Erie Type GA-2 Gas + Air shovel in general excavation work and are well pleased with its operation. Well-known operator Ben Ressler is handling the levers and doing it well.

S. W. Hardwick, Taylorville, Illinois, has recently purchased his second Bucyrus-Erie Type 1035 gasoline dragline and is moving this machine in on a road-grading job near Troy, Missouri.

M. E. Gillioz, Monett, was awarded a nice grading contract of 200,000 yards near Wasaw, at the last letting at Jefferson City. Work will soon begin on this new project.

Hugh R. (Hickory) Smith Company, excavating contractors of Charleston, Missouri, have moved their Bucyrus-Erie B-2 steamer to Mexico, Missouri, where they are now working.

BY C. F. BARTON

The accompanying illustration shows the **St. Louis County Water Company of St. Louis** unloading cast iron pipe 36 inches in diameter and 12 feet long, weighing from 4400 to 6100 pounds each with their Bucyrus-Erie 1030 crane.

St. Louis and Vicinity

BY H. H. BUCHANAN

V. J. Tobias, 1809 Princeton Place, St. Louis, long-time steam shovel operator, demonstrator, "Grand daddy of 'em all," is very much in evidence on the River des Peres Sewer Contract pulling the levers on a Type B-2 Bucyrus-Erie steam shovel for Morgan & Watkins who have a subcontract under the R. J. Blackburn Construction Co. on this million-dollar section of putting the "River of Fathers" in a concrete tube. Mr. Tobias knows his shovel and how to move Mother Earth, and to those who would learn let them watch him for a few hours just to see how it is done. Morgan & Watkins have three B-2 steam shovels on this project, and every one of them is doing its stuff.

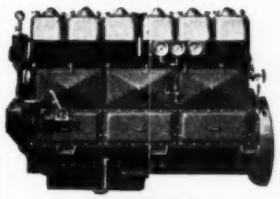
Can you handle tough jobs at a profit?

A Bucyrus-Erie D-2, powered with an Atlas Imperial Diesel, excavating for a logging road in Washington.

WHERE a gasoline engine normally stalls, under heavy load . . the Atlas Imperial Diesel digs-in and lugs. Uniquely, its lugging power (torque) increases under such conditions. Because, with its common rail fuel system, proper atomization is maintained constantly in the Atlas Imperial over the entire range of speeds.

10% to 15% greater yardage . . is the result. Besides . . you cut fuel costs from 75% to 90%. The Atlas Imperial Diesel burns only cheap, low-grade fuel oil, which costs ⅓ to ¼ as much as gasoline . . and it consumes ½ to ⅓ as much.

The 6-cylinder Atlas Imperial industrial full diesel.



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A full line of diesels . . . ranging from 20 H P to 500 H P . . . is manufactured by Atlas Imperial for all marine and industrial uses.

Instant starting and stopping — from stone cold to full load, in ten seconds . . absence of water troubles . . easier movements to and from jobs . . are a few of your advantages over steam.

Under the most severe conditions . . day-in and day-out . . from shift to shift . . the Atlas Imperial Diesel stands the gaff. Its world-wide reputation has been built on its sturdy ruggedness.

First to adapt and prove the diesel engine for excavators, tractors, industrial locomotives, logging engines, oil-well drilling and marine uses . . the Atlas Imperial Diesel Engine Co. is one of the pioneer diesel manufacturers of the country.

Investigate the Atlas Imperial Diesel . . before you buy another engine. Consult any of the companies listed here, or mail the coupon, for more information, direct to us . . Atlas Imperial Diesel Engine Co., Oakland, California.

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This square box Koppel Dump Car providing a quick, clean discharge on either side of track is only one of many types of Koppel Cars that give you practically an unlimited choice in car equipment.

Regardless of special requirements for your individual haulage needs in either design or capacity Koppel can provide a suitable car.

Koppel Industrial Car & Equipment Co.
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Chicago New York
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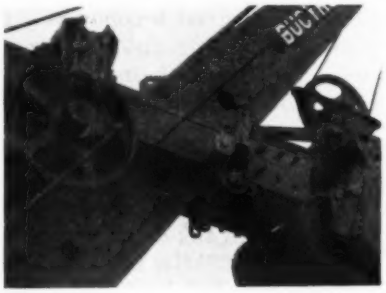
Seconds Count . . .

and a power dipper trip will save *seconds* in each digging cycle.



In this day when buyers measure the digging cycle in *seconds* before purchasing, consider the added output of your shovel after a Bucyrus-Erie power dipper trip has been installed.

Always positive in action, giving trouble-free service, a Bucyrus-Erie power dipper trip will soon pay for itself—and then add profits to the day's work.

For your steam, Diesel or electric shovel—write to **Bucyrus-Erie Company, Specialty Department, South Milwaukee, Wisconsin,** for complete information and prices.

BUCYRUS ERIE

SHOTS FROM THE FIRING LINE — Continued

Len Gray & Son, St. Louis, have just finished their grading project near Memphis, Missouri, and after giving their Bucyrus-Erie Type GA-2 shovel and hauling equipment the once over with the usual coat of paint are now ready to step on the next Missouri state highway project.

We notice that **M. E. Turk, paving contractor, Little Rock, Arkansas,** wanted to be on hand for the Road Show at Atlantic City so he went early in December to New York City. However it is difficult to find Atlantic City once in New York.

J. M. Roark & Son have a fine grading project going in Jasper County, Missouri. J. E. (Jimmie) is making the shovel perform.

Lefferdink Contracting Co., Troy, Missouri, have about 60,000 yards of dragline fill to sublet on their highway job near Troy.

The Mexico (Mo.) Refractories Co. has increased its capitalization to $1,500,000 and J. B. Arthur, president of the company, announces plans for construction of the first units of a fire brick plant at Mexico early this spring. The first units will have a daily capacity of from 6 to 8 carloads of fire brick, it is announced. Mr. Arthur said several months had been devoted to drilling and testing clay lands under lease, and that several million tons of high-grade fire clay have been proved. The excavation required for the construction of the fire brick plant, pit and buildings will involve over 100,000 yards. The contract for the grading has been awarded to the H. R. Smith Co., specialists in stripping quarry and clay deposits.

BY A. J. KOENIG

Langhorne & Langhorne of Huntington, West Virginia, were awarded contract for the construction of twenty-eight miles of railroad from Millard, Kentucky, to state line West Virginia-Kentucky for the Levisa River Railroad Co. a subsidiary of the Chesapeake & Ohio Railroad Co. The amount of the bid was $4,804,000.

Management & Engineering Corporation of Chicago was awarded contract for laying pipe line from Poplar Bluff and Farmington, Missouri, to the trunk line of the Mississippi River Fuel Co.

G. H. Gassaman, Poplar Bluff, Missouri, has contract for grading and paving 10,230 square yards of streets at Campbell, Missouri.

Moore Bros. Construction Co., East St. Louis, Illinois, was awarded contract for redredging 10 miles of the East Side canal, from Peters to the Mississippi River. The bid amounted to $210,055.

The United States Engineers' office, Rock Island, Illinois, awarded contract to Cameron-Joyce & Co., Keokuk, Iowa, for a setback levee in South Quincy, Illinois.

J. J. Bailey, St. Louis, was awarded contract and has his outfit at work on two underpasses, for pedestrians, in University City, Missouri.

Massman Construction Co., Kansas City, was low bidder for the construction of 400 lineal feet standard clump dike and 10,900 feet standard revetment on Missouri River at Contrary and Palmero Bends.

MEETING PLACE OF CAPITAL AND LABOR

THE KOENIG LABOR AGENCIES

Established 1875

ST. LOUIS
612 Walnut Street
Main 2766 and 2767

KANSAS CITY
501 Delaware Street
Main 0796

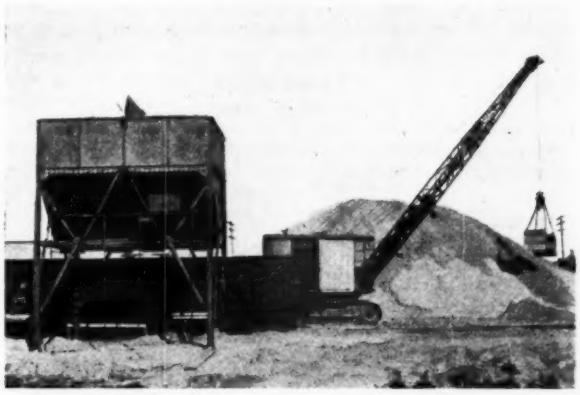
HELP OF ALL KINDS FURNISHED FREE

SHOTS FROM THE FIRING LINE — Continued

Decatur, Illinois, plans the construction of about twelve miles of sewer in the spring. W. D. Warren is consulting engineer.

Hannibal Construction Co., Hannibal, Missouri, has contract for grading and paving various streets in Perryville, Missouri.

Wisconsin Notes



The Roth Building Supply Company of Sheboygan are using their Bucyrus-Erie 1030 clamshell to handle material from car to stock pile and from stock pile into Butler Bin as shown in the above illustration.

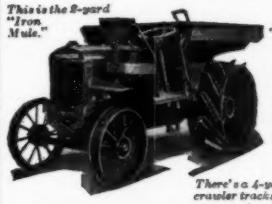
Arkansas Notes

BY H. H. BUCHANAN

The Arkansas Portland Cement Company of Saratoga, Arkansas, are using their Bucyrus-Erie Gas + Air, shown above taking her noonday lunch, as a shovel at present. This

Put An "IRON MULE" on the Job

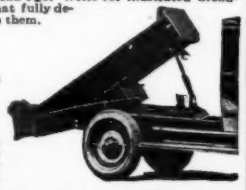
It Licks Trucks and Teams



This is the 2-yard "Iron Mule."

"IRON MULES" for years have made phenomenal profits for dirt-moving contractors. There are 2 sizes—the 4-yard with power hoist dump and crawler tracks, and the 2-yard with gravity dump. These sensational dirt haulers will get where trucks and teams can't go. Write for illustrated broadside that fully describes them.

There's a 4-yard with crawler tracks also.



Dump Bodies Too

HUGHES-KEENAN Dump Bodies for all makes of light trucks are famous wherever dump bodies are used. Made in 1 and 1½ yard sizes, equipped with gravity dump, underbody hand hoist or power hoist. Write for descriptive folder.

THE HUGHES-KEENAN CO. Mansfield, Ohio

OWEN CLAMSHELL BUCKETS MAKE A BIGGER DAY'S WORK

Owen Buckets

A MOUTHFUL AT EVERY BITE

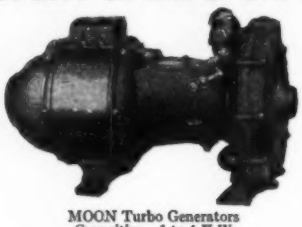
AND MORE BITES PER DAY

Here's a combination that gets the job done with no time lost. Add to that the labor-saving ability to clean-up as it goes along, and you have the real reasons why Owen Type "S" Rehandling Buckets provide a bigger day's work than any other bucket of the same weight and capacity.

THE OWEN BUCKET CO.

6026 Breakwater Ave., Cleveland, Ohio

SPEED UP
with a MOON



MOON Turbo Generators
Capacities—1 to 4 K W

A JOB completed ahead of time, means a bonus; overtime means a penalty. Speed up your jobs by installing a MOON Lighting Plant—work your equipment nights. The MOON is especially suited for construction work because it is compact and rugged in design, simple and economical to operate and absolutely reliable in performance.

Let us help you speed up your jobs.
Write for Bulletin No. 16-T.

THE MOON MANUFACTURING COMPANY
114-128 No. Jefferson St., Chicago

MOON LIGHTING OUTFITS

Requires Less Line Pull- Costs Less to Operate

A PLOW easily cuts dirt. Its shearing action minimizes the line pull and it requires less power. 4000 years have proved that this principle cannot be improved. . . . POWER PLOW SCRAPERS are essentially right and left hand plows. They alone offer all these plow advantages. They require less power to operate, have greater digging ability. In addition, they present less resistance against line of pull, eliminate hoist overstrain and prevent spilling of load. . . . These advantages of Power Plow Scrapers will cut your excavating costs. . . . Write for information.

THE GARST MANUFACTURING CO., 549 W. Randolph Street, Chicago, Ill.

Power PLOW Scraper

SHOTS FROM THE FIRING LINE — Continued

machine was first used as a clamshell and handled all of the sand and gravel used in building the Saratoga plant. According to Paul C. Van Zandt, Chief Engineer, for the Arkansas Portland Cement Company, it unloaded 1000 cars of sand and gravel into a stock pile, and from the stock pile again into the mixing plant. The machine was also used with a hook to erect a great deal of the machinery and structural steel, and later as a dragline to dig about a mile of ditch about 10 feet deep. At present it is being used as a shovel in the low line material, where it is only called upon to produce about 300 yards daily.

Texas Notes

BY GEO. A. CARLSON

The U. S. Gypsum Company is using a Bucyrus-Erie 50-B electric dragline equipped with a 170-foot boom and a Bucyrus-Erie 1030 ¾-yard electric shovel loading to Koppel Cars in the Sweetwater, Texas, quarry as shown in the accompanying illustrations.

Oregon Notes

BY M. D. TROYER

In a recent issue we showed a picture of **Shevlin Hixon Company's** Bucyrus-Erie D-2 building logging roads through the lava rock country in which they are operating. Here is another picture showing J. H. Meister, logging superintendent of this company, looking over the D-2 operations. Mr. Meister, very well pleased with his purchase, speaks highly of the D-2.

And Two Hands, At That!

"Do they use modern methods in that laundry?"
"No, they're still taking off the buttons by hand."

TRADE NOTES

The Trackson Company, Milwaukee, Wisconsin, announces the appointment of the following new distributors, who will handle Trackson Tractor Equipment for McCormick-Deering tractors: The Highway Equipment Co., 919 First National Building, Columbus, Ohio; Industrial Tractor & Equipment Co., 2702 Spring Grove Avenue, Cincinnati, Ohio; Fred D. Marshall Co., Columbia, South Carolina; H. O. Penn Machinery Co., 140th Street and East River, New York City; and Raleigh Road Machinery Co., Raleigh, North Carolina.

These distributors will handle Trackson Crawlers, Shovels, Cranes, Hoists, etc., in their respective vicinities, and will be able to give prompt service on all orders and for repair and replacement parts.

E. I. du Pont de Nemours & Company, Wilmington, Delaware, announces the development of two new low density gelatin explosives which will be marketed under the names of Gelex No. 1 and Gelex No. 2.

These new products are intended for use in ore mines and for the underground mining of limestone and other nonmetallic minerals. Both Gelex No. 1 and Gelex No. 2 are extremely cohesive and plastic so that they will load well in upward pointing holes.

The Portland Cement Association recently announced the appointment of **William G. Hudson** as District Engineer in charge of association work in the states of Louisiana and Mississippi, with offices in the Hibernia Bank Building, New Orleans, Louisiana. Announcement has also been made of the appointment of **Walter R. Macatee** as District Engineer in charge of association work in the states of Virginia and North Carolina with offices at 904 East Main Street, Richmond, Virginia.

Pretty Co-Ed: "I want a pair of bloomers I can wear around my gymnasium."

Clerk (absently): "Yes, madam, what size is your gymnasium?"

BUSINESS OPPORTUNITY.
An excellent opportunity to cut down handling costs is afforded any contractor who puts a Hayward Bucket to use. Address The Hayward Co., 52-54 Church St., New York, N.Y.
Hayward Buckets

Webster Says—

"synonymous" signifies of same or similar meaning. For instance, perfect control of an excavating machine means larger output and

AsBESTos

is synonymous with perfect control.

There is a worth-while saving in the use of AsBESTos blocks, not only in longer life but also in time and labor saved by the elimination of frequent adjustments and replacements of wood blocks.

AsBESTos blocks, made of asbestos fibre with brass wire reinforcement in a special binding compound, offer many advantages over the old-fashioned wood blocks and can be used to replace wood blocks on brake bands and frictions on your present machines. If you are using asbestos blocks now try this better-made friction product for longer service.

Take advantage of the increased production brought about by perfect control and longer life. Order new AsBESTos blocks for your machine—today. Start your spring job right.

Bulletin sent on your request. Bucyrus-Erie Company, Specialty Department, South Milwaukee, Wisconsin.

BUCYRUS ERIE

FOR SALE

Space under this heading is available at the following rates, payable in advance of publication:

1 to 3 inches.....$5.50 an inch net
3 to 7 inches..... 5.25 an inch net
7 to 14 inches..... 5.00 an inch net

An inch is measured vertically on one column — three columns to a page. Any space may be used measured by the even inch in height and by one, two or three columns in width.

The price per inch is based on total space used — multiply ad space by number of continuous insertions.

Address all box numbers c/o The Excavating Engineer at South Milwaukee, Wisconsin

Small Shovels
Under 2 yards

REBUILT BUCYRUS 35-B SHOVEL equipped with 30-foot boom, 19-foot handle, 1½-yard dipper, location southern Illinois. Price reasonable for quick sale, shop number 2196. Box 54-SS.

ONE ERIE HIGH LIFT STEAM SHOVEL, on "cats," 19-foot 8-inch boom, 16-foot dipper stick, new manganese front inserted tooth dipper, machine entirely overhauled, boiler refued, late 1928, after which machine operated only about two weeks. Will sell at a bargain. Box 26-SS.

TYPE "A" ERIE STEAM CLAMSHELL MACHINE, mounted on traction wheels, equipped with 26-foot boom; to operate ½-yard bucket; shipped new 1921. Located southern Iowa. Priced very reasonable. Box 31-SS.

MARION TYPE 37 STEAM SHOVEL, shop number 4778, four-belt caterpillar steel treads, equipped with 28-foot 6-inch high lift boom, 19-foot dipper handle, 1¾-cubic-yard manganese front dipper, boiler in excellent condition, power boom hoist, attractive price. Located Oklahoma. Box 30-SS.

1½-YARD HEAVY-DUTY OSGOOD SHOVEL, No. 1091. Boom 26 feet, dipper handle 22 feet and 1½-yard dipper; also 50-foot boom, dragline equipment. Price $3000.00. Machine in good condition. Address Box 1006.

REBUILT GA-2 ERIE SHOVEL mounted on new single shaft caterpillar, 1-cubic-yard inserted tooth dipper, 22-foot 6-inch boom, 16-foot dipper handle, starter. Carries guarantee of new machine. Box 43-SS.

PRACTICALLY NEW BUCYRUS-ERIE 1030 HIGH LIFT SHOVEL. Price $1,500 less than new machine. Guaranteed. Box 44-SS.

BUCYRUS-ERIE TYPE B COMBINATION ¾-CUBIC-YARD SHOVEL. Shop number 3623, 40-foot clam, boom and dragline equipment, crawler tread. Very good. Location Detroit. Box 45-SS.

BUCYRUS-ERIE TYPE 20-B DIESEL, shop number 4133, ¾-cubic-yard dipper. Combination shovel and clam boom equipment. Excellent condition. Crawler mounting. Location Detroit. Box 46-SS.

KOEHRING SHOVEL, number C-308, caterpillar mounted. ¾-cubic-yard dipper, 19-foot boom, 16-foot dipper handle, in very good condition. Price $6,000, f. o. b. Parksville, Sullivan County, New York. Box 33-SS.

NORTHWEST SHOVEL, model 105, caterpillar mounted. 24-foot boom, 1-cubic-yard dipper, 16-foot dipper handle. In good condition. Price $4,500, f. o. b. Utica, New York. Box 34-SS.

BUCYRUS 30-B DIESEL COMBINATION SHOVEL — DRAGLINE — CLAMSHELL CRANE. 25-foot 9-inch shovel boom, 14-foot dipper handles, 1-cubic-yard cast front dipper. Clamshell-dragline-crane boom 40-foot channel, engine Atlas 3-cylinder, 55 h.p. Completely rebuilt, carries same guarantee as new machine. Available immediate shipment. Box 35-SS.

FOR SALE

OSGOOD 1¼-YARD STEAM SHOVEL on caterpillars, now working and can be inspected. Priced reasonable and can be handled on terms if necessary. Communicate with the **Wm. H. Ziegler Co., Inc., 619 Washington Ave., So., Minneapolis, Minnesota.**

MARION SHOVEL, Model 220 or 212, Shop No. 3141. In first-class condition. 45-foot camel-back boom, 28-foot dipper sticks, 1¾-yard dipper. Also dragline boom for this machine. Box 805-C.

OSGOOD No. 18 FULL REVOLVING STEAM SHOVEL, shop number 1203, mounted on new caterpillar type trucks; 19-foot boom; 13-foot dipper handle, ¾-yard dipper; complete; standard specifications.

All above f. o. b. cars, shipping point in Virginia. Address Box 319.

MODEL No. 21 MARION STEAM SHOVEL, high lift boom and forward drum, in excellent condition, boiler just retubed, location Baltimore. Price $5,000.00. Address Box 1101.

BUCYRUS-ERIE 50-B DIESEL COMBINATION SHOVEL AND DRAGLINE, shop number 4609, also includes 2-yard drag bucket. Located at Miami Shores, Florida. Price $17,800. Box 24-SS.

BUCYRUS 14-B STEAM SHOVEL, revolving type, ¾-yard. Serial number 1595, tractor type. Requires new boiler. For sale "as is" at a bargain. Located near New York City. Address Box 1207.

TYPE "B" ERIE STEAM SHOVEL, shop number 2019, mounted on new caterpillar type traction purchased late spring of 1929. Equipped with 21-foot 2-inch boom, 18-foot 6-inch dipper handle and ¾-cubic-yard dipper. First-class condition. Price $4,500 F. O. B. Louisville, Kentucky. Box 12-SS.

TYPE "B" ERIE STEAM SHOVEL, shop number 2492, mounted on "Cats." Equipped with 21-foot 2-inch boom; 18-foot 6-inch dipper handle. First-class rebuilt condition. Price $4,500. F. O. B. Louisville, Kentucky. Box 13-SS.

TYPE "B" ERIE STEAM SHOVEL, shop number about 2510, caterpillar mounted; equipped with 17-foot 6-inch boom, 14-foot dipper handle, ¾-cubic-yard inserted tooth dipper and 1¼-cubic-yard lightweight dipper, and power boom hoist. Located southeastern Wisconsin. Priced cheap. Box 9-SS.

MARION 37 STEAM SHOVEL, on cats, 28-foot 6-inch boom, 19-foot handle, 1¾-yard manganese front dipper, located near Catale, Oklahoma. Machine used very little and in exceedingly good shape. Priced to sell. Address Box 805-A.

1¾-YARD OSGOOD "HEAVY DUTY" STEAM SHOVEL, caterpillar mounted, 26-foot boom, 18-foot dipper handle, 1¼-yard manganese Missabe dipper with Vanderhoef front. Shovel No. 1374. Shipped March 1924. Boom, dipper and dipper handle very good condition. Will make attractive price. Located in New England. Box 1200.

BUCYRUS-ERIE 30-B DIESEL COMBINATION SHOVEL AND DRAGLINE. Shop No. 4536. Equipped with 31-foot boom, 17-foot dipper sticks, 1-yard plate dipper. Also 40-foot dragline boom for this machine. Good working condition. Box 3-SS.

TYPE "A" ERIE STEAM SHOVEL, ⅝-yard dipper, 16-foot boom and 13-foot dipper handle. Caterpillar type mounting. Completely rebuilt and with same guarantee as new machine. Immediate shipment. Located in Indiana. Address Box 305.

TYPE 3-A THEW, located near Crowder, Oklahoma. 31-foot boom, 24-foot handle, 1 cubic-yard dipper. Shop number 2150. Shovel used very little. Equipped with new boiler. For immediate delivery. Address Box 805.

MARION 26 STEAM SHOVEL, shop number about 2940. Equipped with 32-foot boom, 21-foot handle, mounted on 5-foot traction wheels. Can be inspected at Pittsburgh, Pennsylvania. Machine in excellent condition, ready for immediate delivery. Address Box 600.

ONE NEW ONE-YARD KOEHRING GASOLINE SHOVEL run only about four months. Will sell at a bargain. Box 27-SS.

MARION ELECTRIC SHOVEL, Model No. 36.
MARION STEAM SHOVEL, Model No. 36.
Location Central Ohio. Box 1204-A.

TYPE "B" ERIE SHOVEL, shop number 2837, mounted on Caterpillar type traction. Equipped with 19-foot 8-inch boom, 16-foot dipper handle, and ¾-cubic-yard dipper. In first-class condition. Price f. o. b. Louisville, Kentucky, $4500.00. Box 53-SS.

TYPE "B" ERIE STEAM SHOVEL, caterpillar mounted, equipped with 21-foot boom, 18-foot dipper handle, boom hoist, ¾-cubic-yard dipper; sold new 1924; just completely overhauled; price reasonable; located vicinity of Chicago. Box 41-SS.

KOEHRING COMBINATION SHOVEL AND CLAMSHELL MACHINE, number C-125, caterpillar mounted. 17-foot boom, 13-foot dipper handle, ⅝-cubic-yard dipper, 42-foot clamshell boom and ¾-cubic-yard Owens clamshell bucket. $3,000 f. o. b. Parksville, Sullivan County, New York. Box 32-SS.

RECONDITIONED TYPE-A ERIE STEAM SHOVEL on caterpillars, ⅝-cubic-yard dipper, 16-foot boom, 13-foot 8-inch dipper handle, power boom hoist, Massachusetts boiler. Machine thoroughly inspected, worn parts replaced and guaranteed to be in first-class operating condition. Will rent or sell. Box 37-SS.

OSGOOD STEAM SHOVEL equipped with 1¼-cubic-yard Missabe dipper. Good condition. Located Connecticut. Box 38-SS.

TYPE B-2 ERIE STEAM SHOVEL, shop number about 4000, caterpillar mounted, ⅞-cubic-yard inserted tooth dipper, 21-foot 3-inch boom, 18-foot 4-inch dipper handle, power boom hoist, Massachusetts boiler. Reported good operating condition. Located Boston. Price subject prior sale, $5,000. Will rent with option to purchase. Box 39-SS.

RECONDITIONED TYPE B-2 SHOVEL, shop number approximately 4350, caterpillar mounted. ⅞-cubic-yard inserted tooth dipper, 21-foot 3-inch boom, 18-foot 6-inch dipper handle, power boom hoist. This machine thoroughly inspected, worn parts replaced. Guaranteed to be in good operating and mechanical condition, but not rebuilt. Will rent with option to purchase. Price on application. Box 40-SS.

MARION MODEL 36 STEAM SHOVEL, 1½-cubic-yard dipper, mounted on "cats," now operating and in first-class condition. Attractively priced. Box 49-SS.

MARION MODEL 38 STEAM SHOVEL, 2-cubic-yard dipper, mounted on "cats," now operating and in first-class condition. Attractively priced. Box 50-SS.

MARION STEAM SHOVEL, Model No. 36. 1½-yard bucket. Location Ohio. At a bargain price. Box 1205.

Small Draglines
Under 2 yards

SARGENT DRAGLINE with 45-foot boom, 1¼-cubic-yard Page bucket, on cats. Machine in good working condition. Located in Central-Eastern Illinois. Price $3500.00. Address Box 1103.

BUCYRUS 30-B DIESEL COMBINATION DRAGLINE — CLAMSHELL — CRANE SHOVEL, 40-foot channel clamshell-crane-dragline boom, Atlas 3-cylinder engine 55 h.p. Shovel boom 25-foot 9-inch, 14-foot dipper handle, 1-cubic-yard cast front dipper. Completely rebuilt. Carries same guarantee as new machine. Available immediate shipment. Box 35-SD.